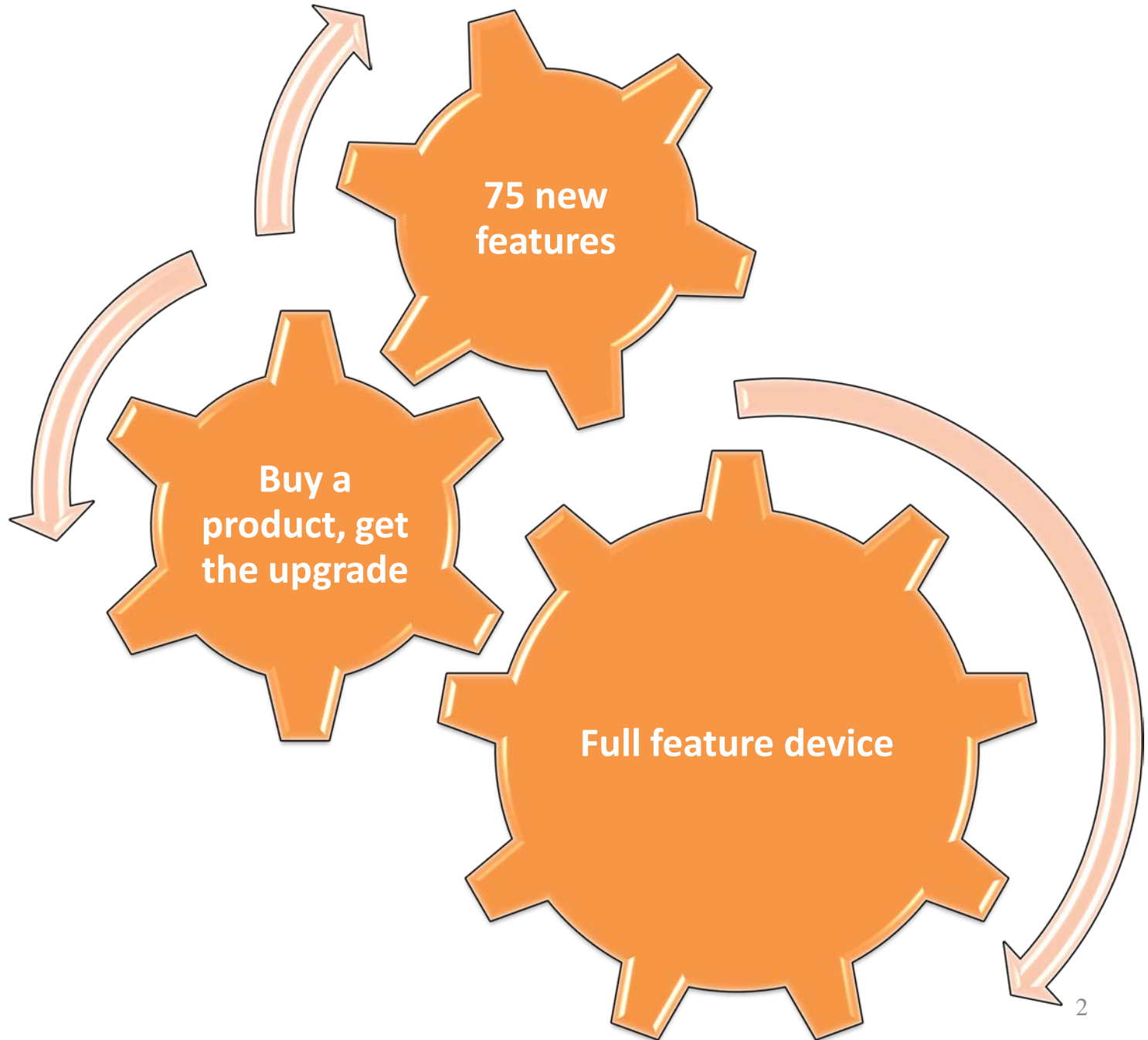


What's New in VEO Version 3.5.5

Eric Dusablon

27/11/2013



VEO List of Enhancements (1-25)

- Introduction of Zoom function into S-Scan, L-Scan
- New Welcome screen on boot and file load
- New Inspection Wizard to help setup of new configurations from scratch
- Inspection: Hide Voltage Mono in PA setup, and vice-versa
- View Layouts
 - New view layouts configurations, including layouts with 3d views
 - Views resizable with mouse
 - 2D C-Scan are rendered during acquisition (Live Merged C-Scan), #3609
 - Show if Top/End/C views are in depth or amplitude mode in layout image
- Part: New types of Welds (U-weld, J-weld)
- Part: Curved parts support in UT and TOFD:
 - New type of part added : “Inside Pipe (ID)” and “Outside Pipe (OD)”
 - Defect positioning on 3D curved part
 - Curve Part Measurement (Depth and Surface Distance considering curvature)
- Part: Part menu now before Probe menu.
- Part: Added Graphite/Epoxy to material list, #3661
- Probe: Spike mode support, a new parameter has been added in Mono probe menu: “Pulse Type”
- Probe: Allow changing Probe->Pulse Width in Play mode, #4902
- Probe/Wedge: New ".utprobe" and ".utwedge" extension for Probe and Wedge files.
- Wedge: simplified usage in Conventional/TOFD, only need to enter X-Offset and Refracted angle to have a functional wedge.
- Scan: Renamed Delay to Zero
- Scan: Added Contouring mode (as per MasterScan, SiteScan and D-Series)
- Scan: Addition of reject mode: Suppressive and Linear (as per MasterScan, SiteScan and D-Series)
- Scan: Show actual velocity value in Wave Mode list
- Scan: Smoothing now configurable to None, Low, Medium or High (previously only high was available)
- Scan: Re-ordered some parameters, especially Acquisition Freq from Inspection, now configurable per Scan
- Scan: Auto-Gain feature simplified. Simply hold dB button to set gain in current gate to the reference amplitude, usually 80%, or use the “Scan->Auto FSH%” button.

VEO List of Enhancements (26-49)

- Wizards: DGS enhancement
 - Halve the lowest allowed ERS (equivalent reflector size), and use a more fine-grained DGS resolution, #4489
 - Enhance curve drawing; continue calculating points in the entire listening window.
 - Add “material attenuation” to DGS wizard
 - Add “Split DGS” enhancements
 - Add a “DGS Options” section into Scan to ease control without entering wizard
 - Add "Curve Ref Correct" into “DGS Options” section to allow/disallow curve displacement when changing gain
- Wizards: DAC enhancement
 - Add “Split DAC” enhancements
 - Add a “DAC Options” section into Scan to ease control without entering wizard
 - Add "Curve Ref Correct" into “DAC Options” section to allow/disallow curve displacement when changing gain (Dynamic DAC)
 - Allow gain adjustment during and after DAC wizard
- Wizards: allow access in STOP mode when config is valid
- Wizards: when setup is mono only, hide wizards that don't apply
- Wizards: Add gain at final step of Velocity and Zero wizard, #3020
- Wizards: Correction of TCG during calibration (allow to change gain)
- Wizards: help panel can be hidden with F1 to have more view space while calibrating
- 3d view: Redesigned 3D views
 - Bottom-right view shows different visual contexts depending on the selected tab
 - Clearer representation of probe and part
 - Many new sizing measures displayed directly in 3D view
 - Phased Array: Graphical representation of RX delay in 3D views
 - UT: Curve part Rendering
 - HAZ: Heat-Affected Zone
 - Add stream direction.
- View: Time-based ruler, #4592
- View: New grid type: Dots (Graticules)

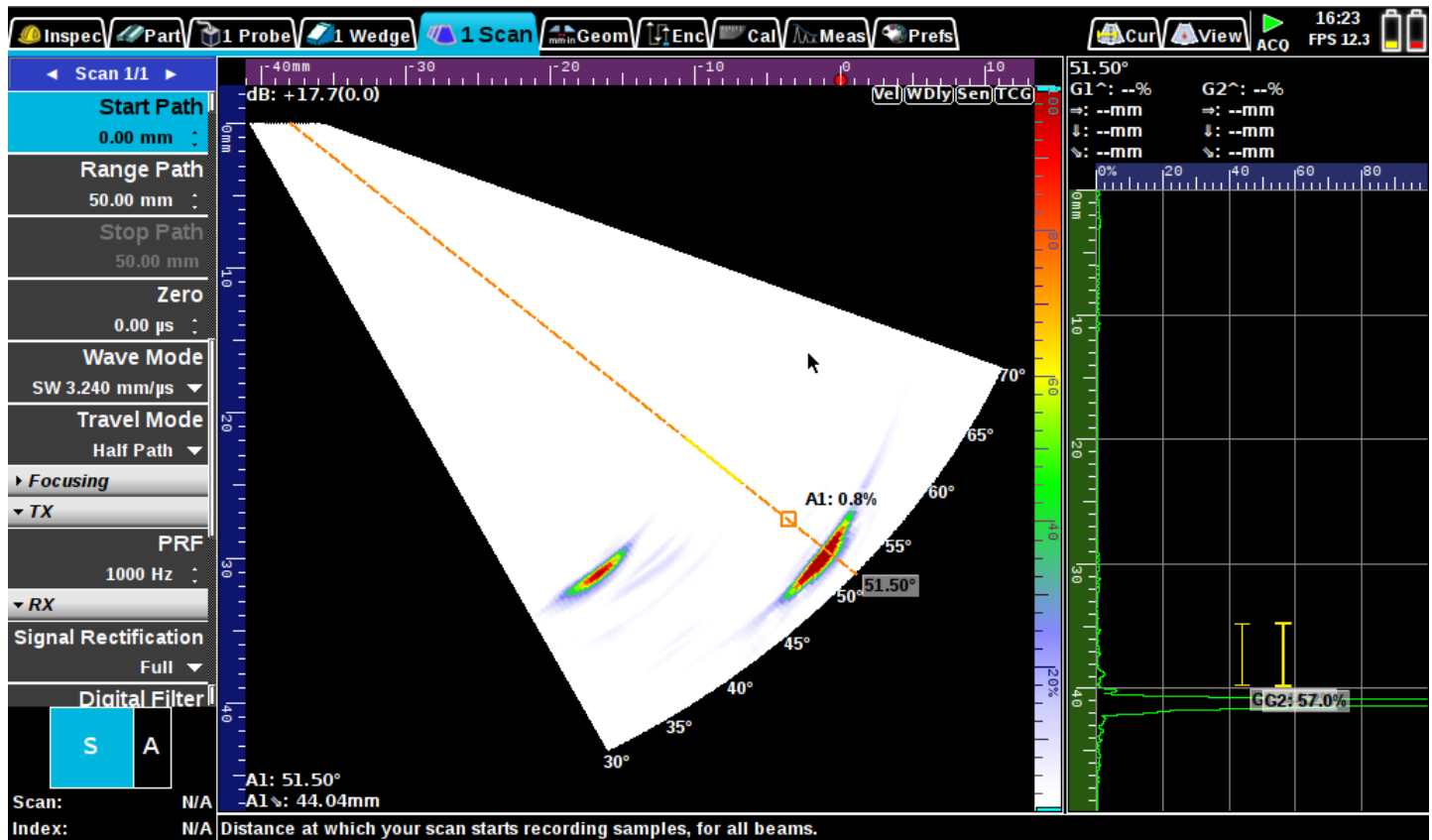
VEO List of Enhancements(50-75)

- View: Reference A-Scan
 - Save Reference A-Scan (A-Log) into configuration file (.UTCFG)
 - Export Reference A-Scan (A-Log) into CSV file
- View: UT, B-Log Live (Live thickness logging with part profile)
- View: 2D C-Scan are rendered during acquisition (Live Merged C-Scan)
- View: Dual Polarity Gate/Box: added as view option when scan is not rectified, controls how C-Scans, Top and End views are extracted (positive, negative or RF spectrum).
- View: Addition of fixed depth palette, can be extended out of min/max range.
- View: The B-Scan now supports 2 rendering modes (fit or scroll)
- View: Can be resized with mouse.
- Prefs: “Auto-hide menus” option to enable a maximal view area in PLAY
- Prefs: Software updates is now achieved from the application (with a single button push)
- Network: Acquisition files shared through FTP server.
- Report: Add Amplitude Tolerance for Sensitivity and TCG calibrations
- Config Summary: Added Part velocity, X-Offset
- Config Summary: Show errors and tips at top of window instead of bottom.
- Media browser: Improved media browser workflow (saving and loading files is now much easier)
- Media browser: Clearer display of all available drives.
- Media browser: Remember last Drive, Sorting and Filter.
- UI: Show full-length value when value is too large to fit
- UI: Display FPS (Frame per Second) and PRF (Pulse Repetition Frequency) in top right corner of user interface
- UI: User Interface green when using a conventional scan
- UI: PDF viewer: remember page if re-opening same document
- UI: Add Hungarian translation.
- UI: Add Italian translation.
- Defect Table (UTStudio only)
- HTT: better and more detailed hardware tests
- HTT: Added support for new HW test kit (HTTV3)

Phased Array

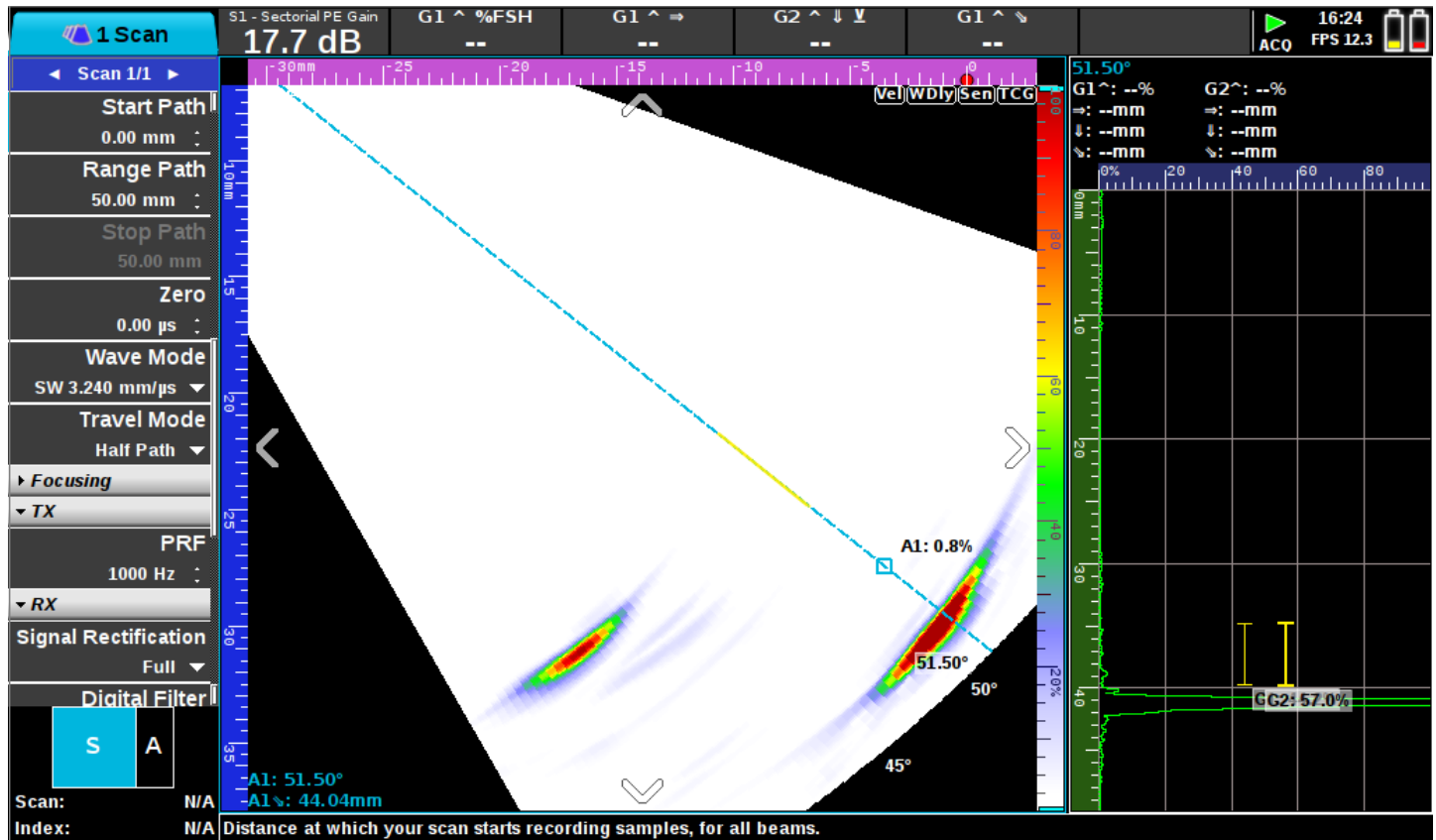
Zoom (L/S-Scan)

- Enhance resolution into “Region of Interest” (ROI)



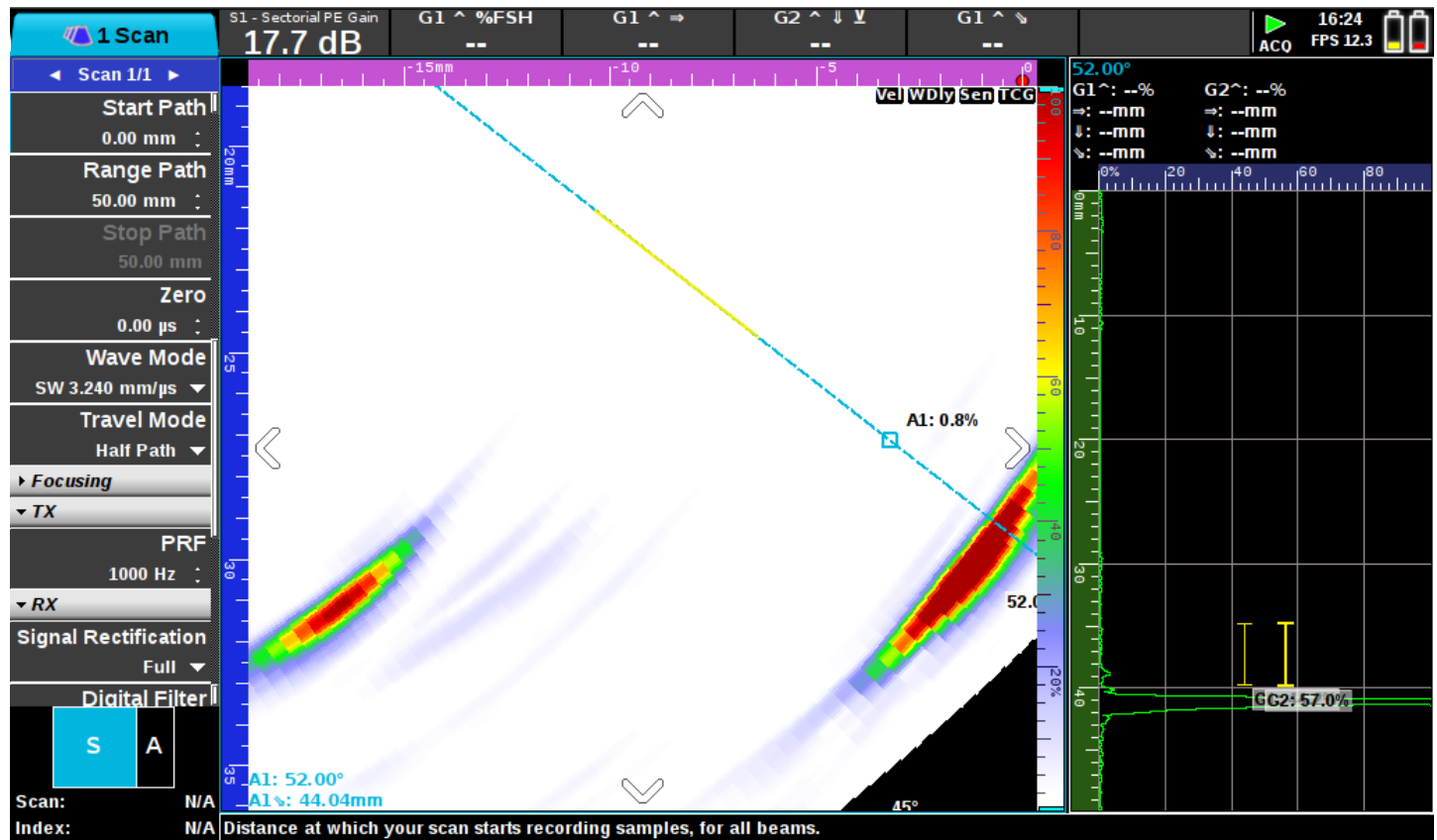
Zoom (L/S-Scan)

- Enhance resolution into "Region of Interest" (ROI)



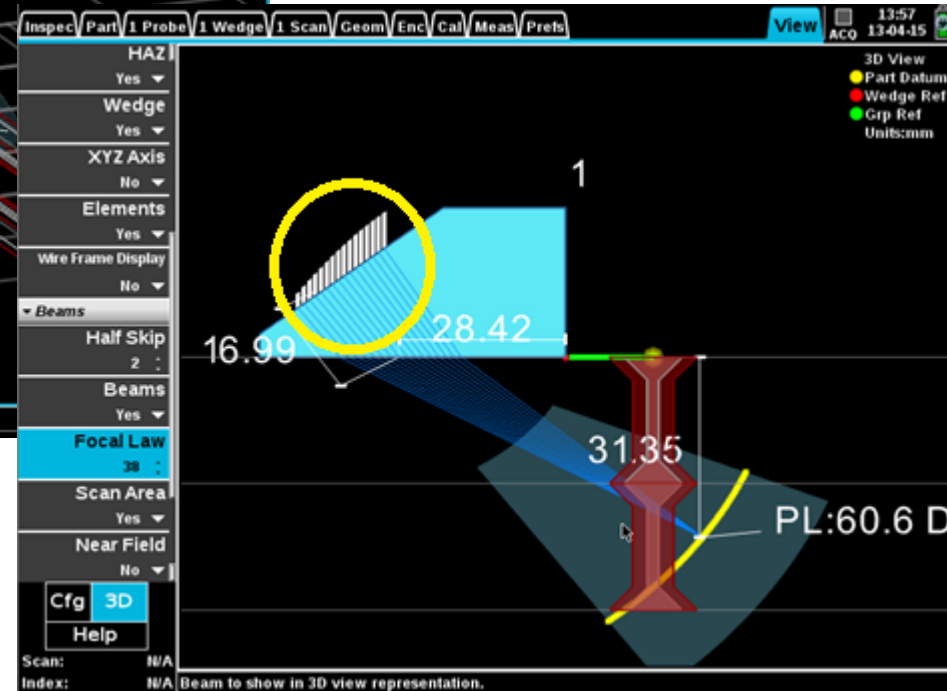
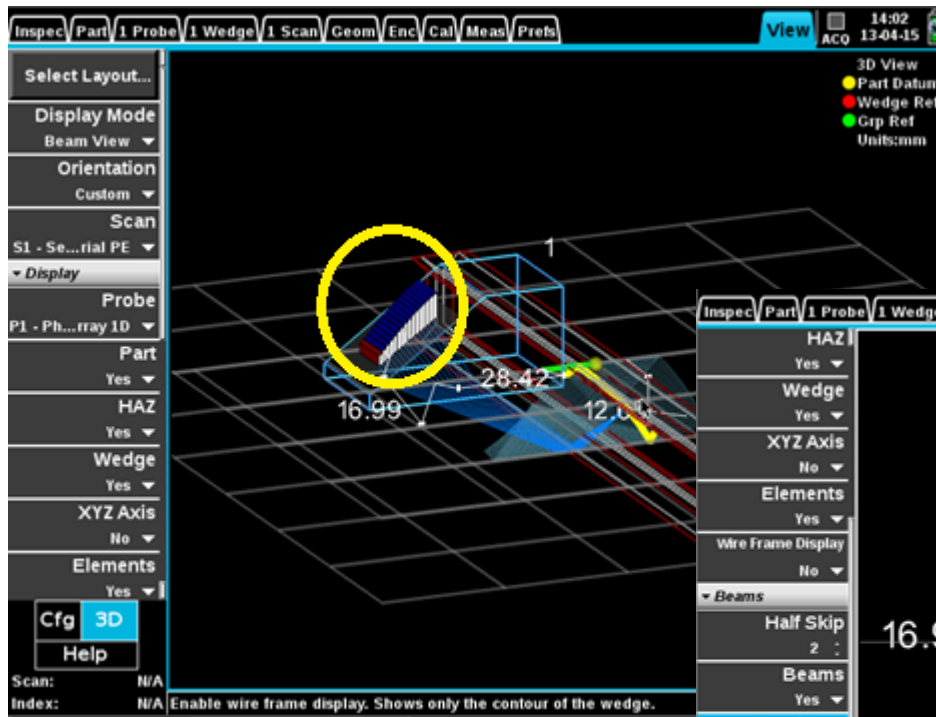
Zoom (L/S-Scan)

- Enhance resolution into "Region of Interest" (ROI)



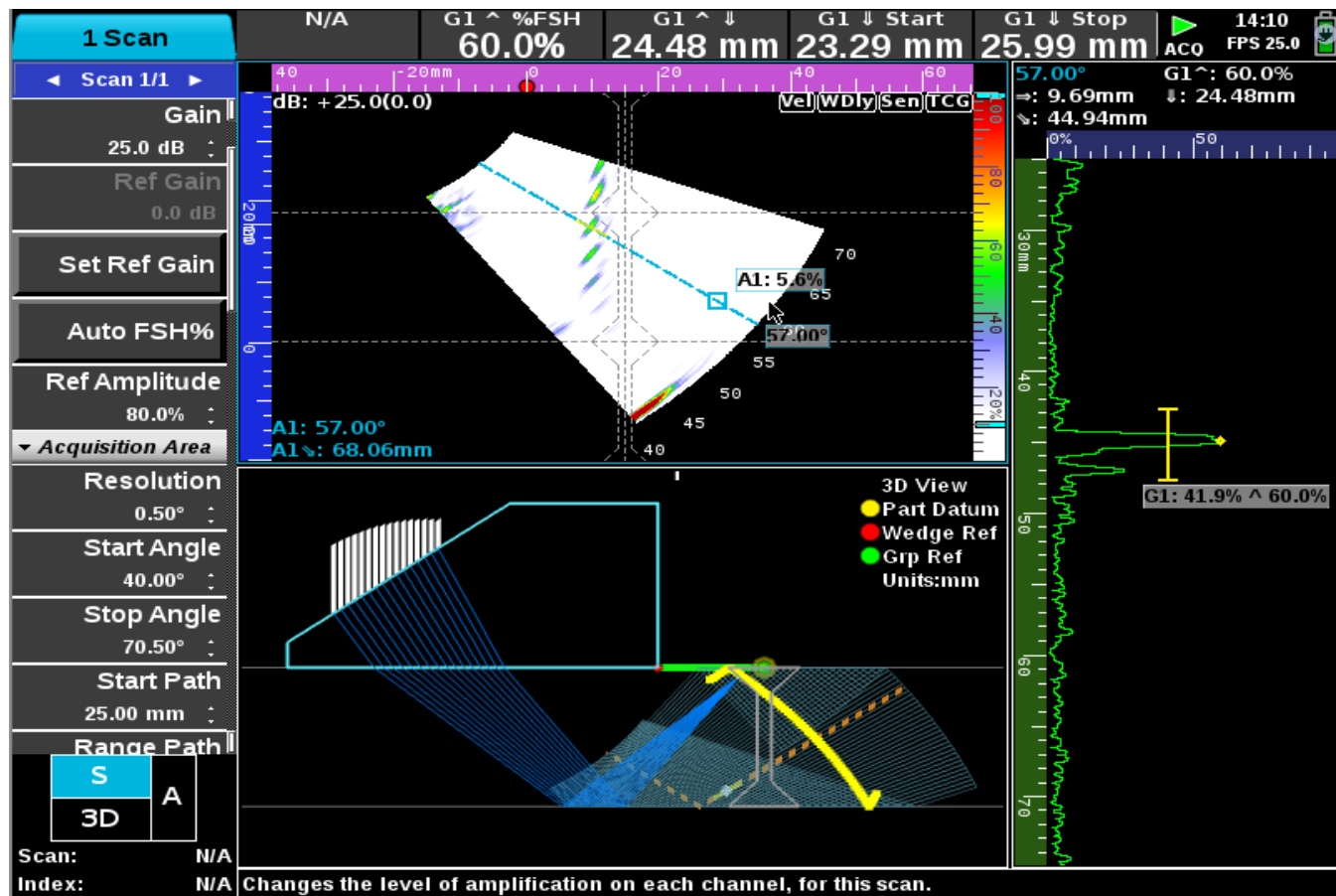
Phased Array: Graphical representation of RX delays in 3D views

- Great pedagogic tool
- Fast and quick look to the elements used by the setup
- Add relevant measurements



Phased Array: Graphical representation of RX delays in 3D views (live)

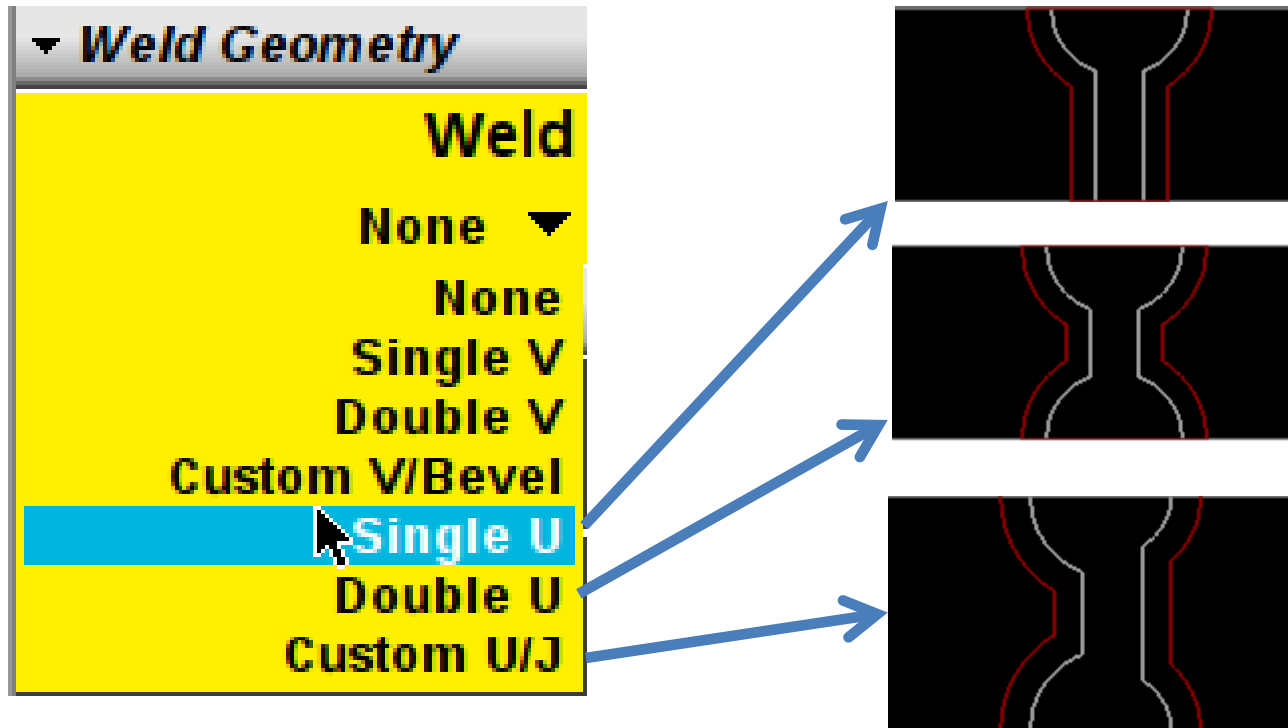
- Understand part and defect position



Phased Array Conventional UT

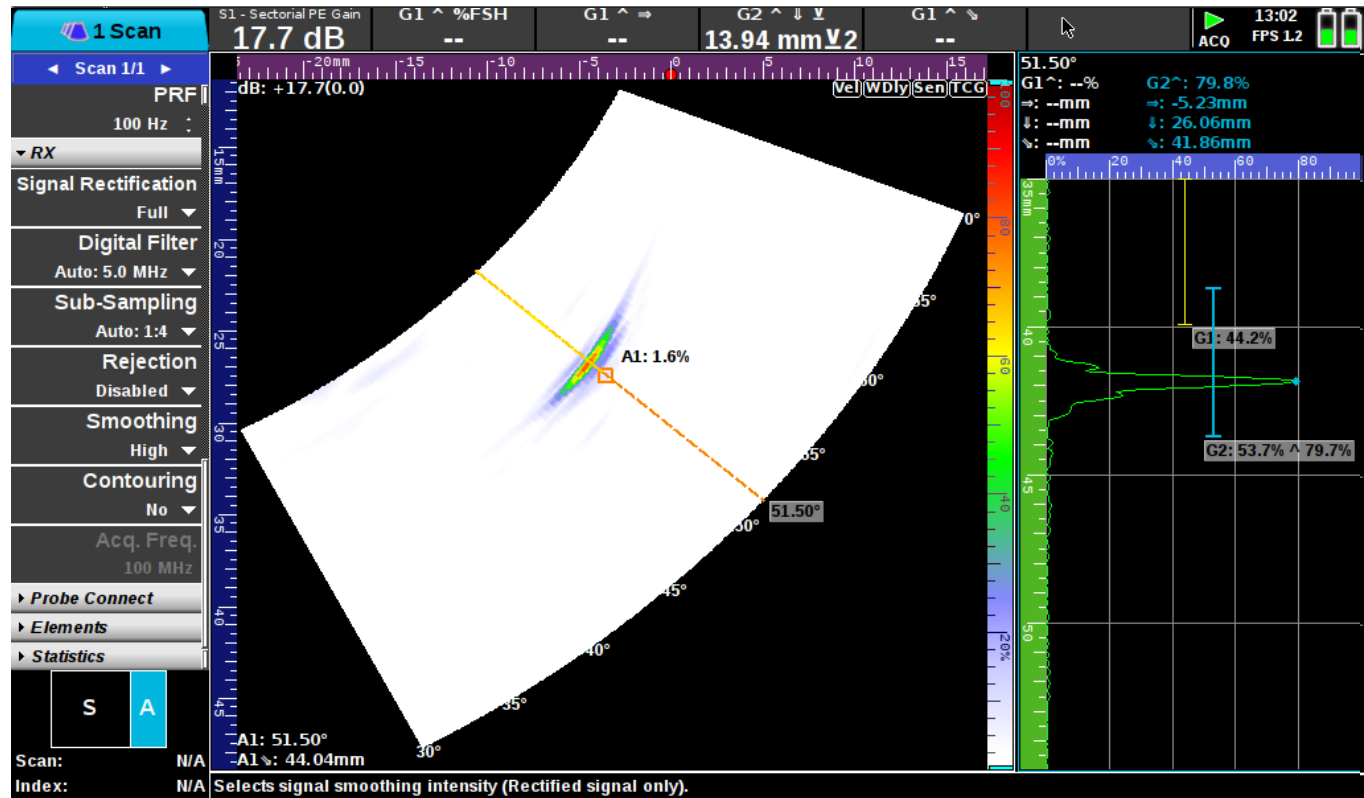
New Weld type (U-weld, J-weld)

- *One more step to represent the real part*



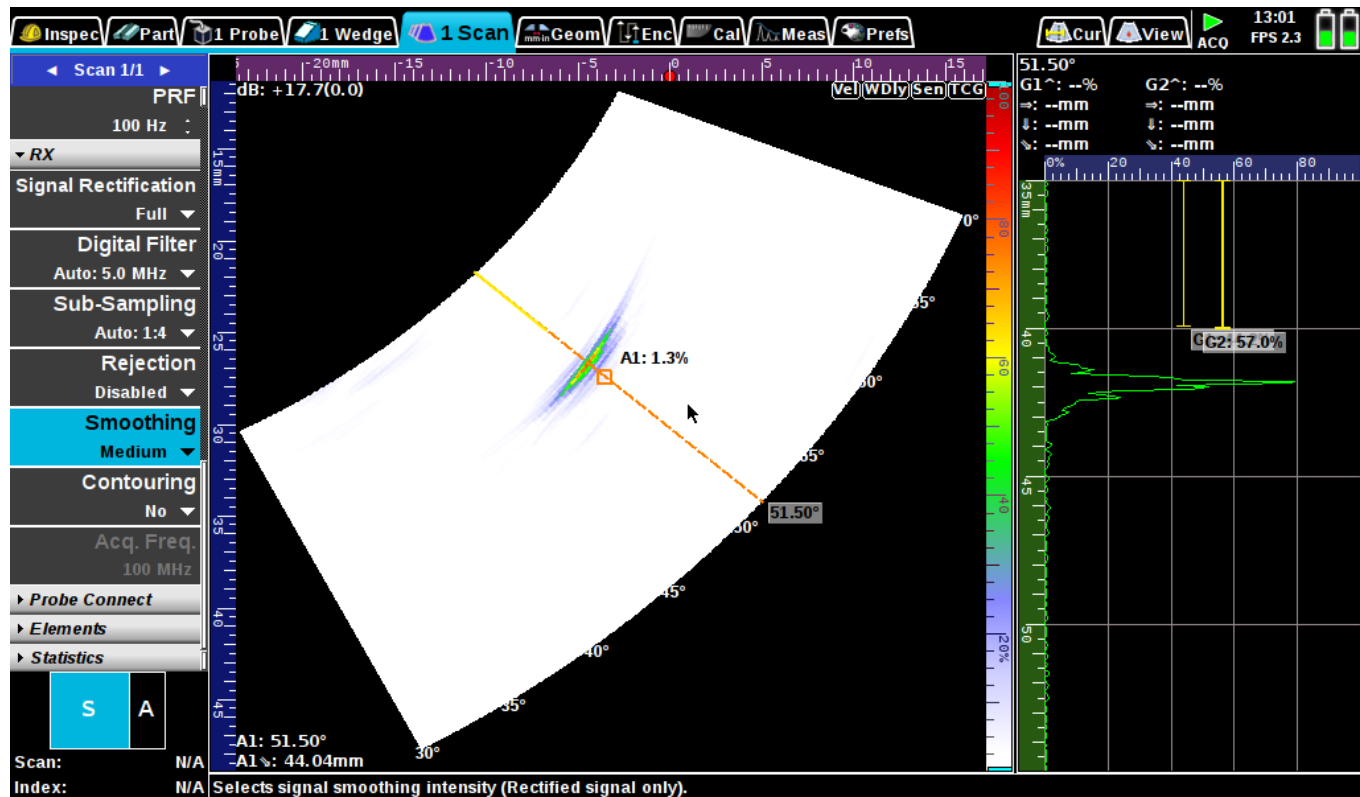
Smoothing now configurable to None, Low, Medium or High

- Choose the right smoothing level for your probe frequency



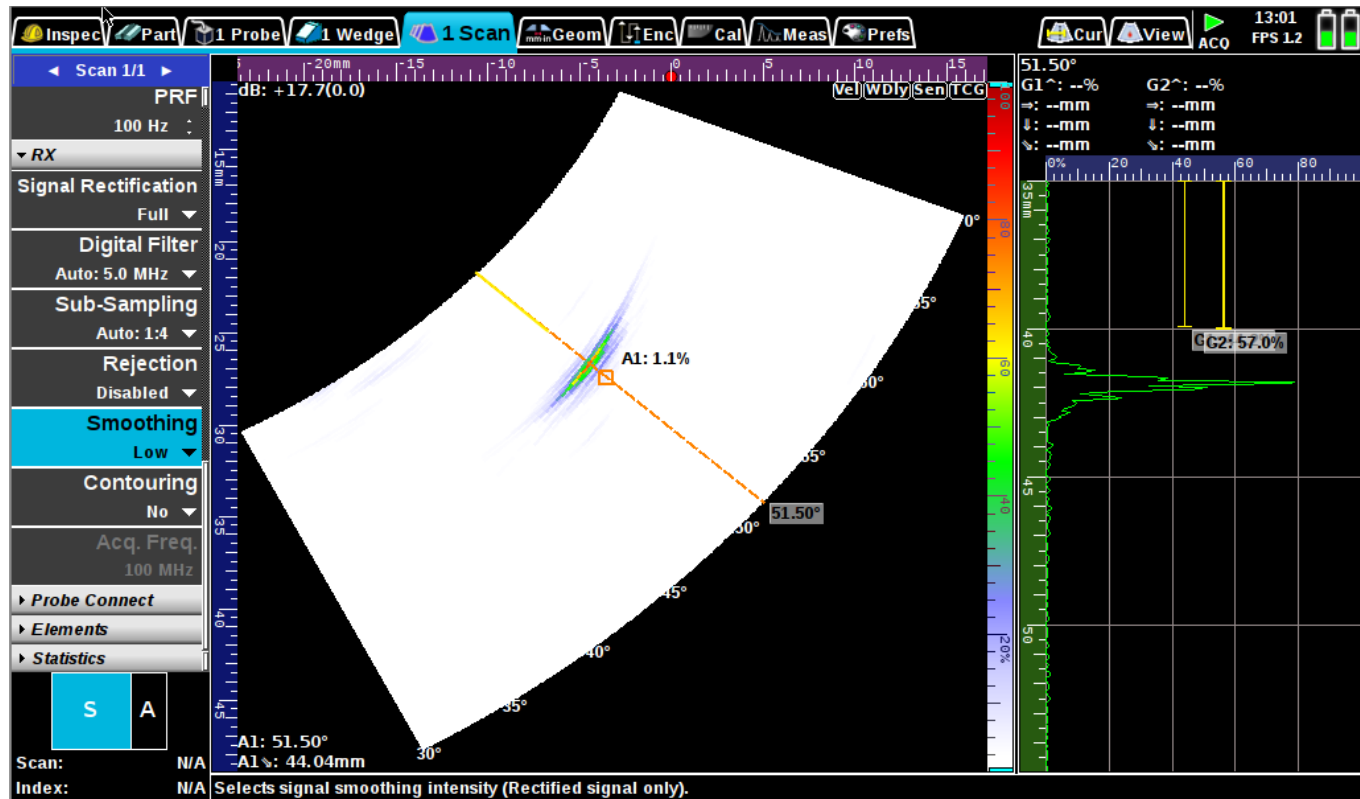
Smoothing now configurable to None, Low, Medium or High

- Choose the right smoothing level for your probe frequency



Smoothing now configurable to None, Low, Medium or High

- Choose the right smoothing level for your probe frequency



Redesigned 3D views

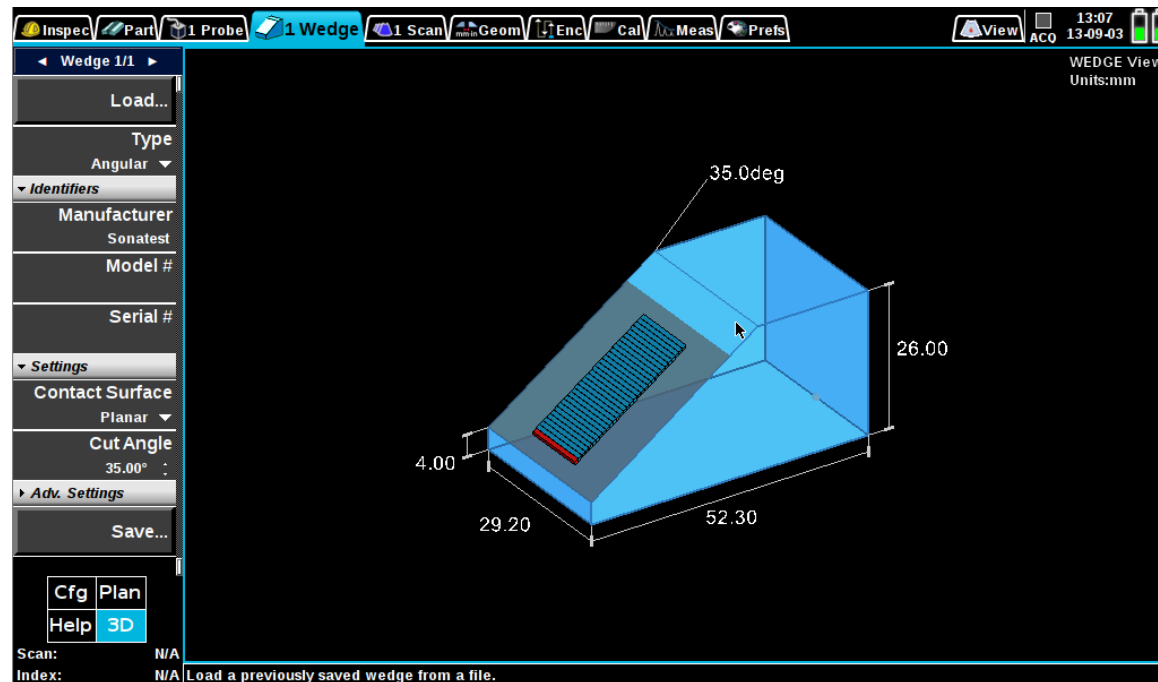
- *Bottom-right view shows different visual contexts depending on the selected tab*

The screenshot displays the Sonatest software interface with the following components:

- Top Menu Bar:** Inspec, Part, 1 Probe, 1 Wedge, 1 Scan, Geom, Enc, Cal, Meas, Prefs, View, ACO, 13:06, 13-09-03.
- Left Panel (Scan 1/1):**
 - PRF: 100 Hz
 - RX: [Dropdown]
 - Signal Rectification: Full
 - Digital Filter: Auto: 5.0 MHz
 - Sub-Sampling: Auto: 1:4
 - Rejection: Disabled
 - Smoothing: High
 - Contouring: No
 - Acq. Freq.: 100 MHz
 - Probe Connect
 - Elements
 - Statistics
 - Buttons: Cfg, Plan, Help, 3D
- File Name Panel:**
 - File Name: \XXC.utcfg
 - Inspection: 50.88 KB per frame
 - Part: Velocity (LW: 5.890 mm/μs, SW: 3.240 mm/μs)
 - Probe / Wedge: Probe 1 (1D, 32 Elements, 5.00 MHz)
 - Wedge 1 (Angular, Planar, Cut Angle 35.00°)
 - Scan: Scan 1 (Sectorial PE, Constant Depth 42.00 mm)
 - Angle (Start 30.00°, Stop 70.00°, Resolution 0.50°)
 - Elements Used (TX 1-16, RX 1-16)
 - Path (Start 35.00 mm, Range 20.00 mm, Auto: 1:4)
 - Digital Filter (Auto: 5.0 MHz)
 - Pulse Damping Filter (Automatic)
- Smoothing Panel:**
 - Smoothing**
 - The Smoothing item allows the user to pre-filter the signal with a low-pass filter during signal processing.
 - Warning:** Smoothing, like filtering, affects the A-scan signals and all the imaging. Therefore, you must be careful when selecting the smoothing mode. Typically, the smoothing will affect the dead zone, meaning that each signal will decay down to zero after a period of time. You should make sure that weak signals such as tip diffraction and corner reflection are discernable enough for your sizing requirements. The use of a filter will affect raw data during a recording.
- TOP View (Units:mm):** A top-down view of the scan area showing a central blue square.
- 3D View (Units:mm):** A 3D perspective view of the scan area with a yellow part datum, a red wedge reference, and a green group reference. Dimensions shown include 9.95, 41.16, and 42.00. A scale bar at the bottom right indicates PL:48.7 D:210.0%.

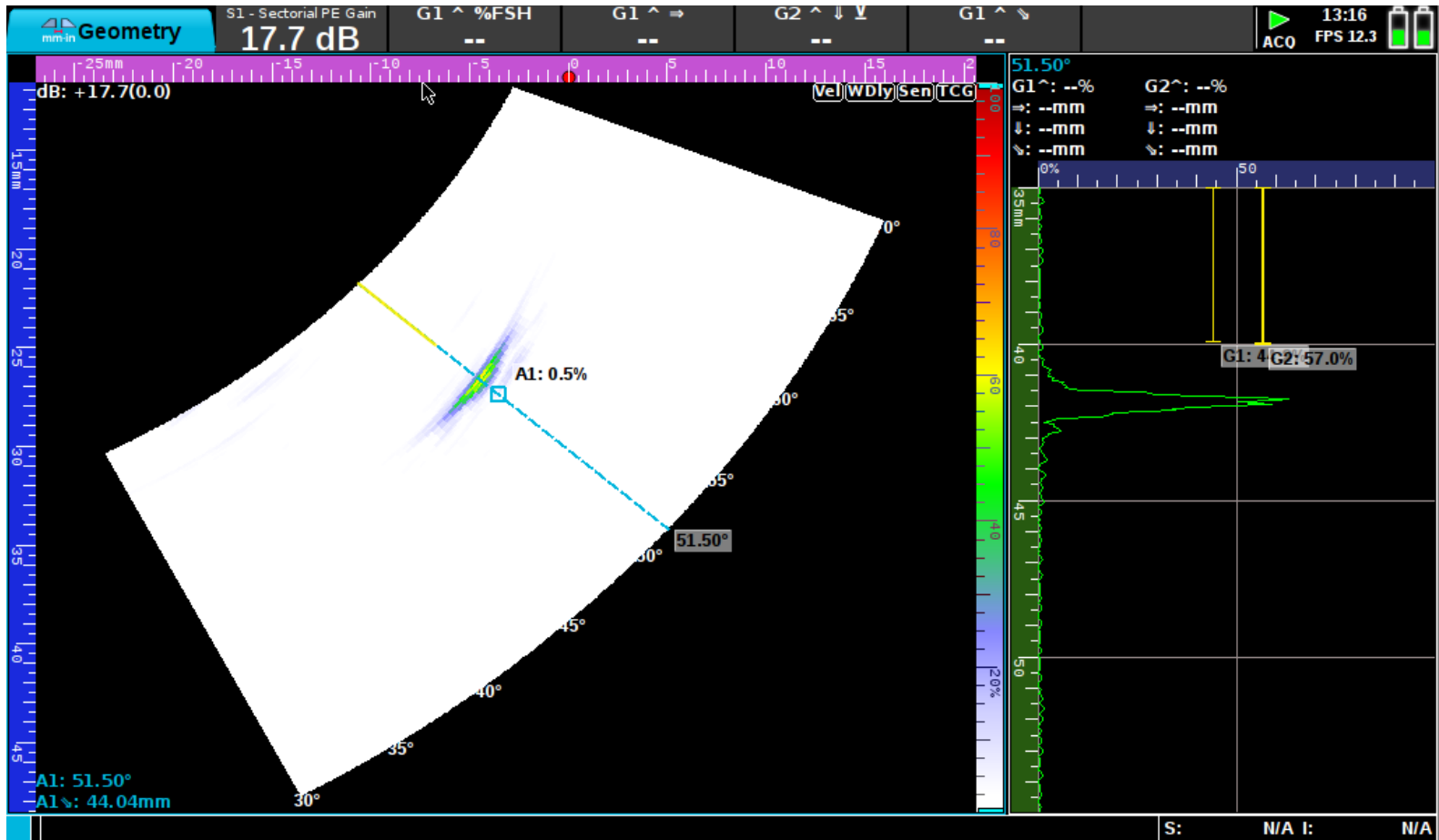
Redesigned 3D views

- *Clearer representation of probe, wedge part and part*
- *Many new sizing measures displayed directly in 3D view*



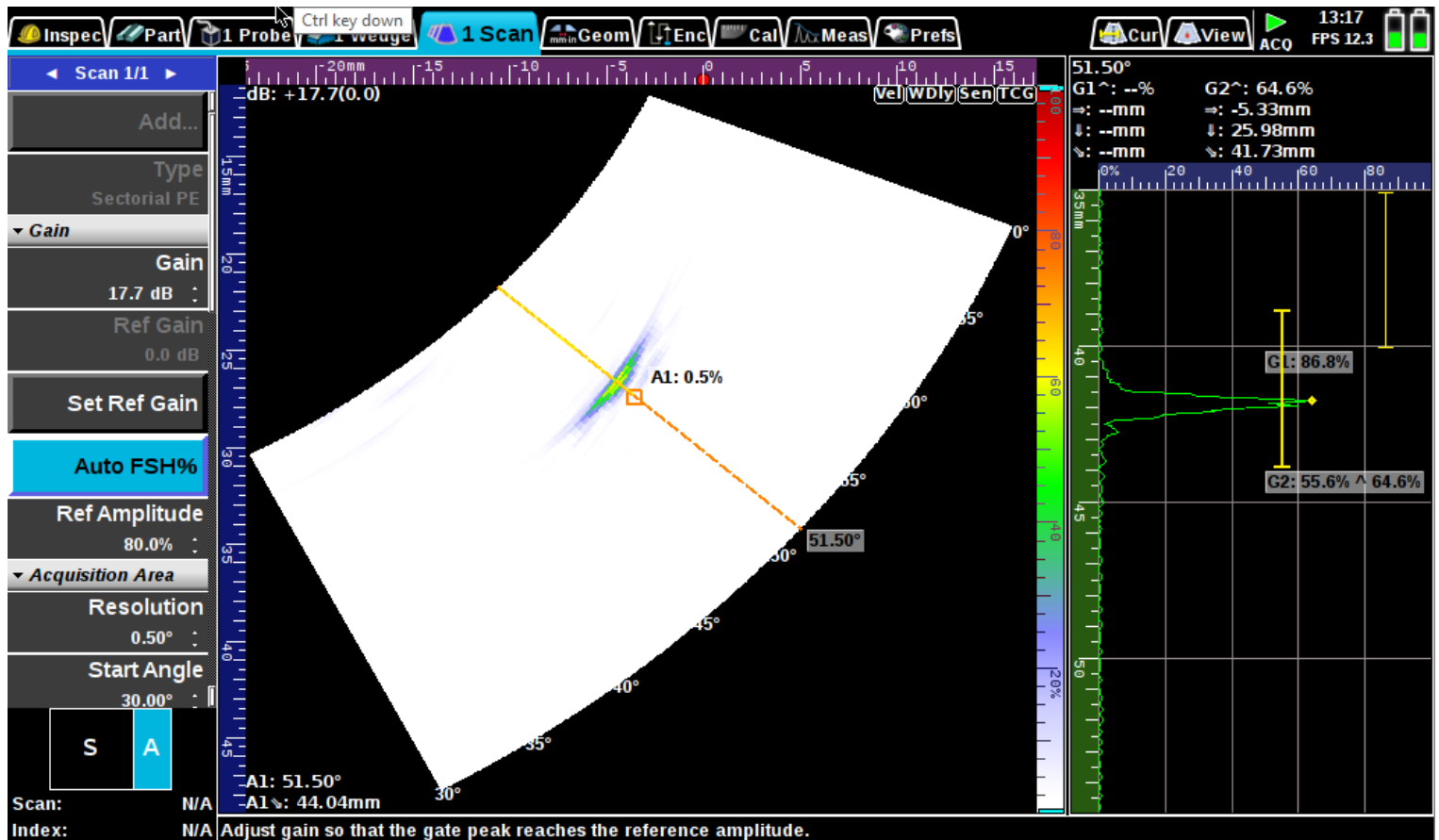
Full Screen Mode

- *Prefs: “Auto-hide menus” option to enable a maximal view area in acquisition*
- *Better viewability when using a multi-group setup*



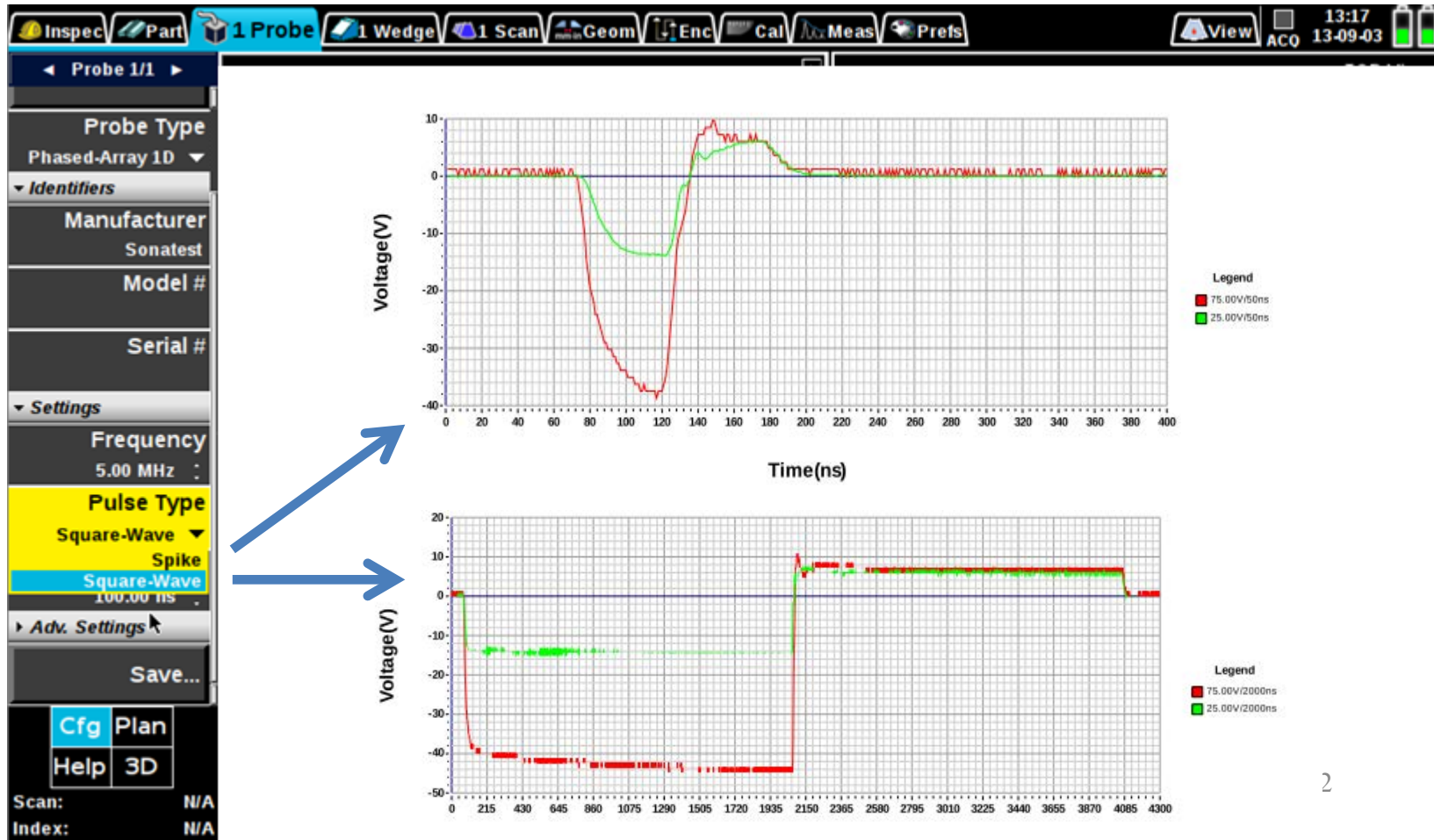
Auto-Gain feature simplified

- *Simply hold dB button to set gain in current gate to the reference amplitude (usually 80%)*
- *or use the “Scan->Auto FSH%” button.*



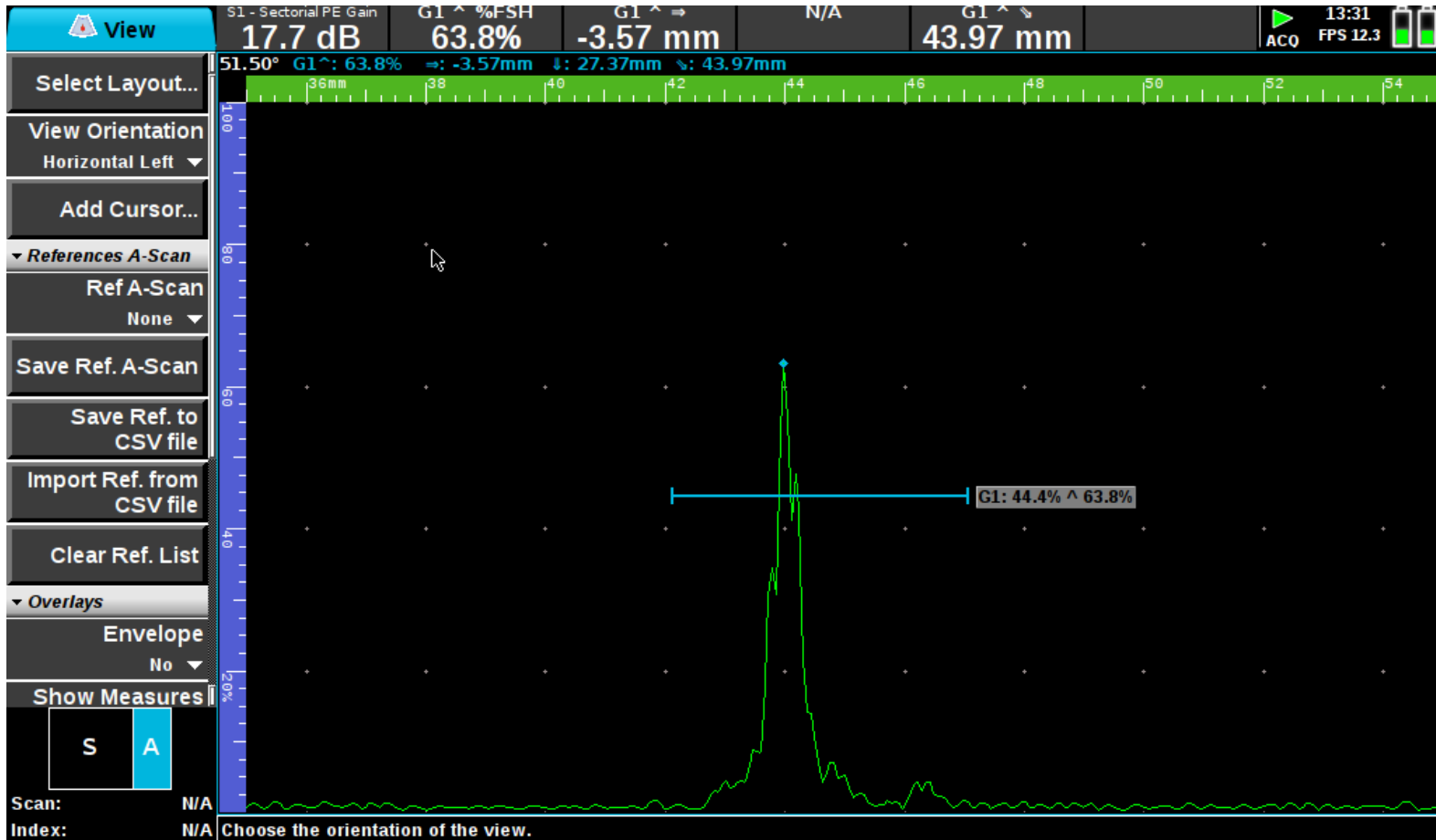
Spike Pulse mode support

- *New parameter has been added probe menu: “Pulse Type”*
- *Reduce Amplitude of reflector but increase SNR*



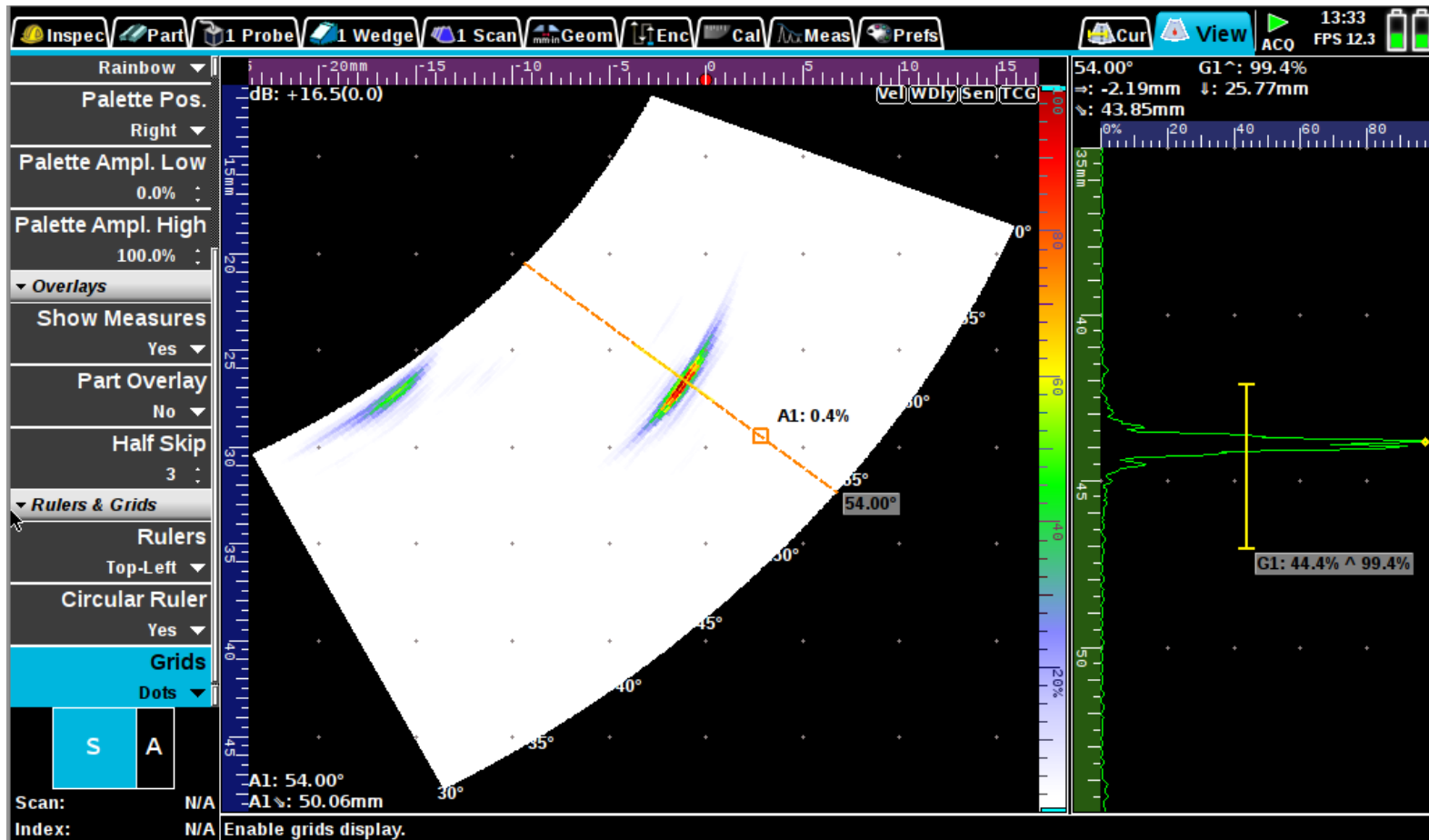
New grid type: Dots (Graticules)

- *Light weight grid*

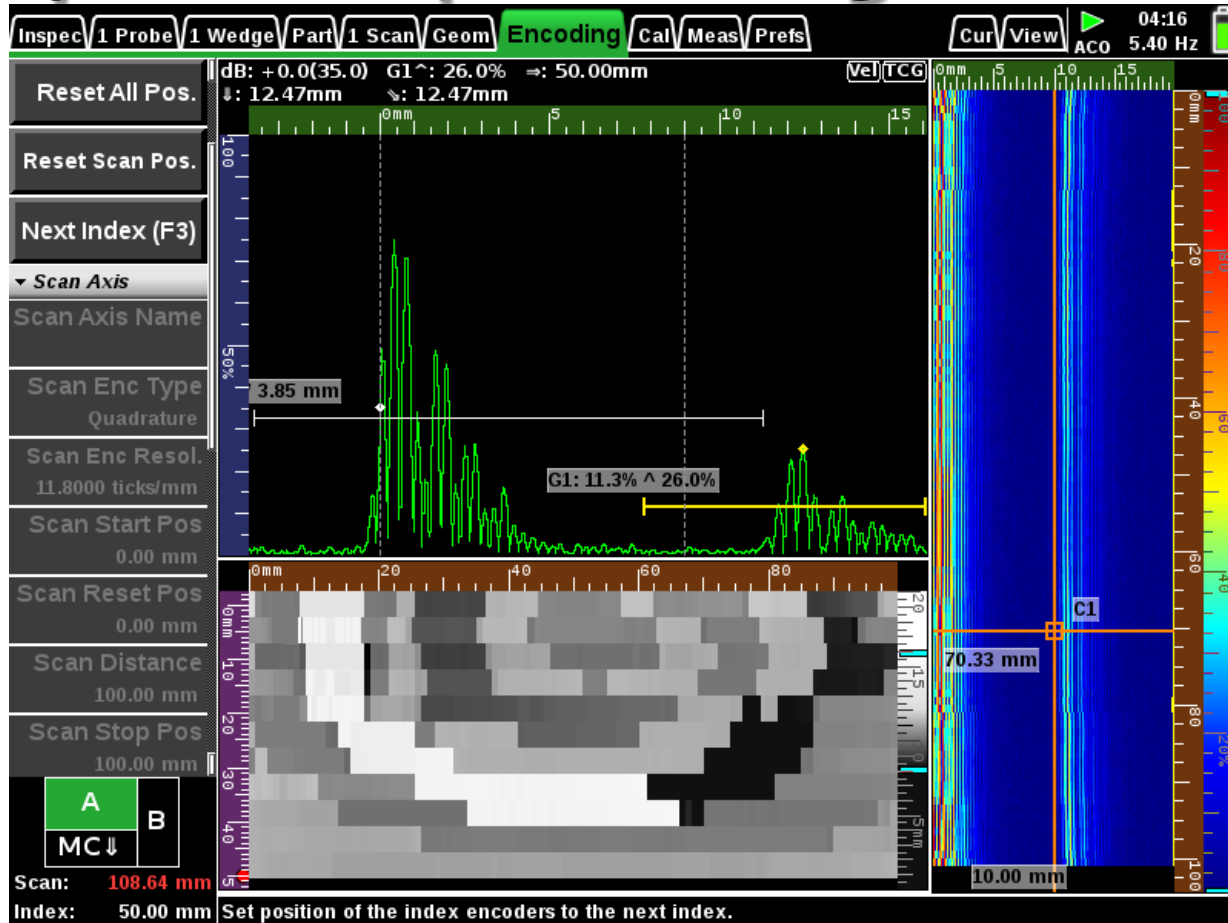


New grid type: Dots (Graticules)

- *Light weight grid*

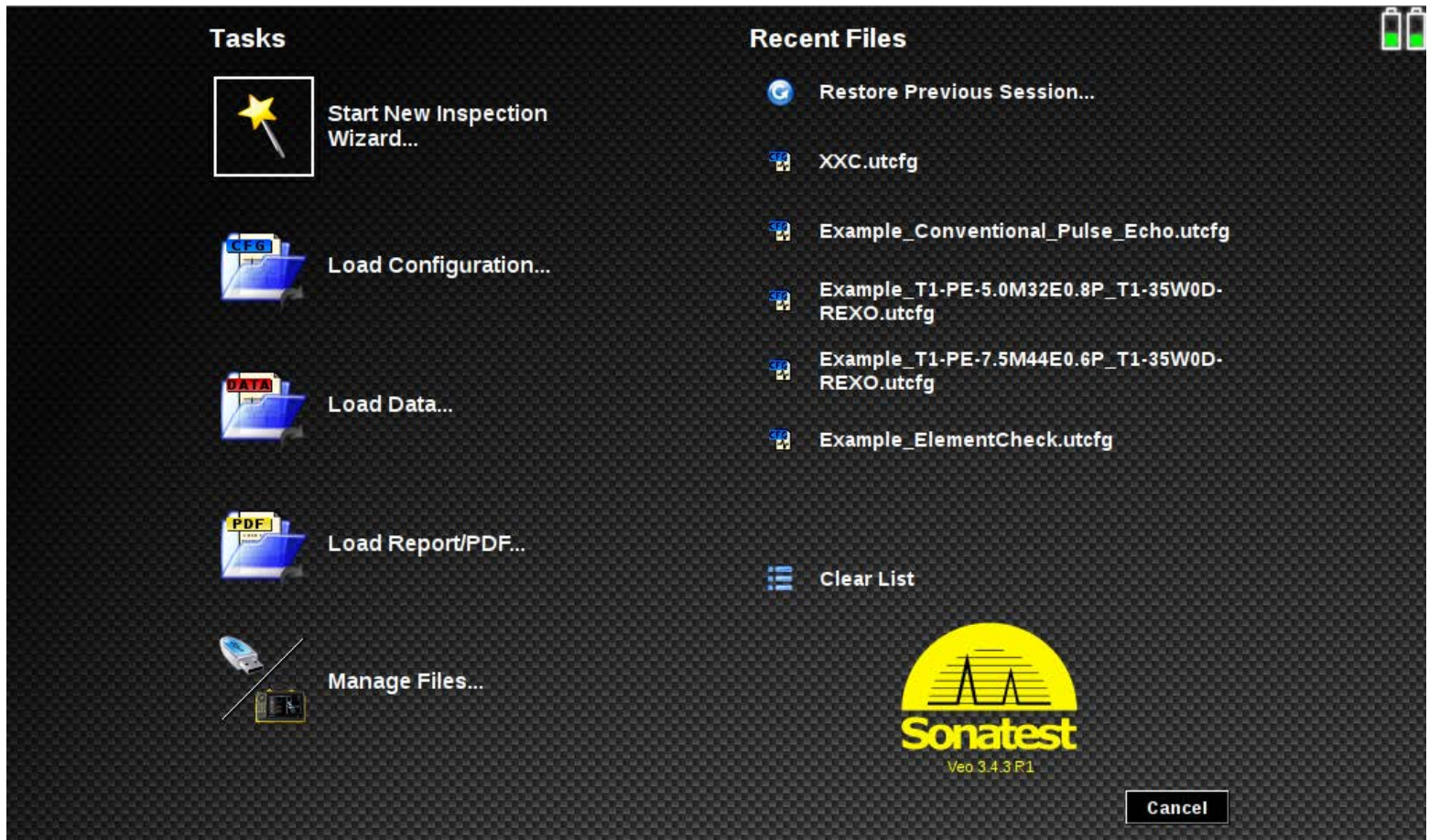


2D C-Scan are rendered during acquisition (Live Merged C-Scan)



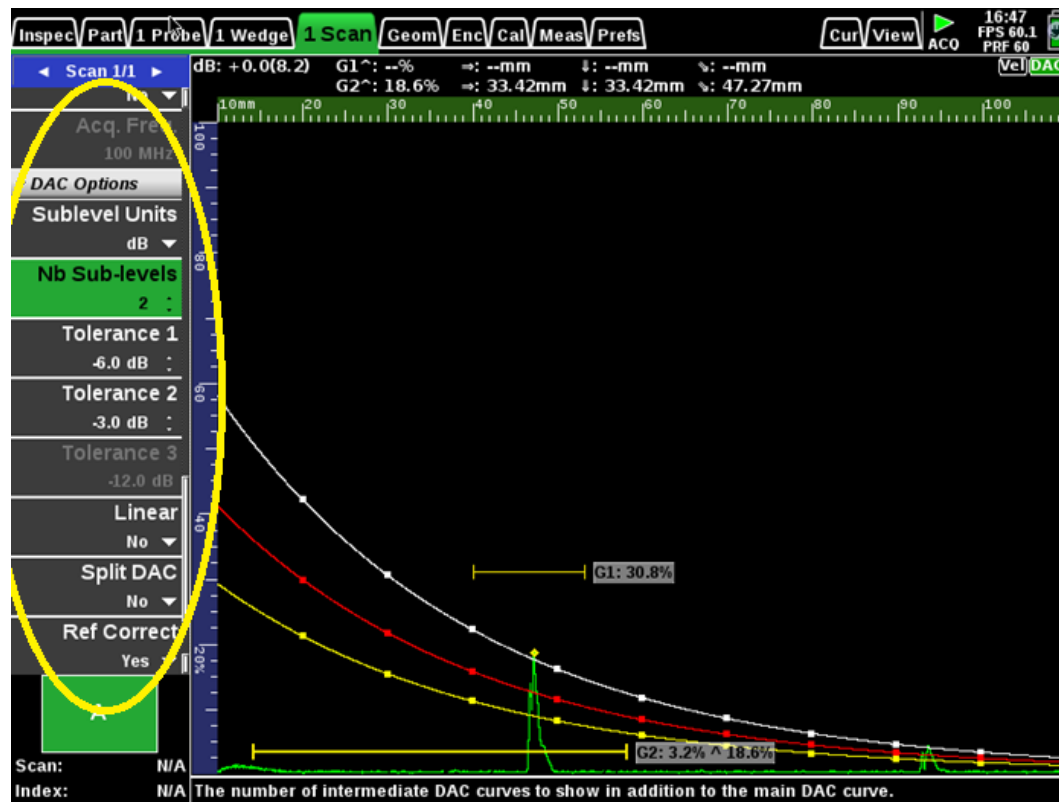
New Inspection Wizard

- *To help setup of new configurations from scratch*



DAC/DGS Sub-Menu

- *No need to run the wizard to change some useful DAC or DGS parameters*
- *“Ref Correct” allows moving the curves when gain is changed*



Conventional UT

Curved Part in UT

- **New type of part added : “Inside Pipe (ID)” and “Outside Pipe (OD)”**
- **Axial and Circumferential Weld**
- **Defect positioning on 3D curved part**
- **Curved Part Measurement (Depth and Surface Distance considering curvature)**

The screenshot displays the Sonatest software interface for inspecting a curved part. On the left, a sidebar shows the 'Part Geometry' section with 'Outside Pipe' selected. The main area shows a 3D model of a curved part with a weld, with dimensions such as 15.00, 10.00, 2.00, 8.00, 16.00, and 10.00, and angles of 45.0deg. A '1 Scan' table is visible, and a waveform plot shows a peak at 91.3%. The bottom right shows a 3D view of the scan area with a legend for 'Part Datum', 'Wedge Ref', and 'Grp Ref'.

S1 - Mono PE Gain	G1 ^ %	G1 ^ ↓	G1 ^ →	G1 ^ %FSH	ACQ	59.70 Hz
53.5 dB	43.61 mm	0.24 mm	42.64 mm	91.3%		
dB: +43.5(10.0)	G1 ^: 91.3%	→: 42.64mm	↓: 0.24mm	↘: 43.61mm		

Curved Part in TOFD

The screenshot displays the Sonatest software interface for TOFD (Time-of-Flight Diffraction) scanning. On the left, a settings panel is visible with the following parameters:

- Scan: 1/1
- Gain: 40.0 dB
- Ref Gain: 10.0 dB
- Ref Amplitude: 80.0%
- Start Path: 16.00 μ s
- Range Path: 6.00 μ s
- Buttons: Cfg, 3D, Help

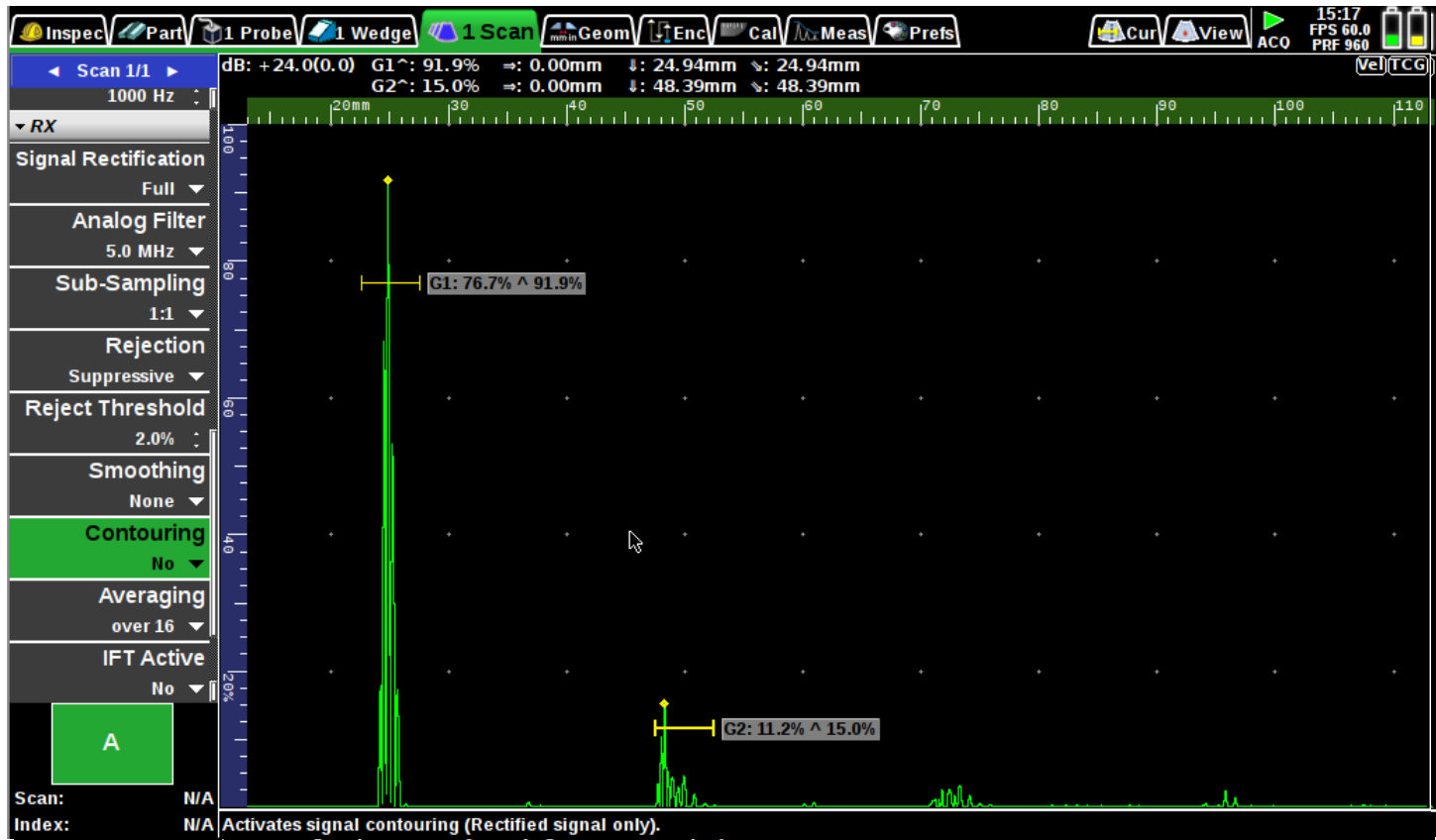
The main 3D view shows a curved part with two acquisition areas labeled '1' and '2'. A green line represents the 'Grp Ref' (Group Reference) path, and a yellow dot indicates the 'Part Datum'. Red lines and dots represent 'Wedge Ref' (Wedge Reference) points. The units are set to mm.

Legend for 3D View:

- Yellow dot: Part Datum
- Red dot: Wedge Ref
- Green line: Grp Ref
- Units: mm

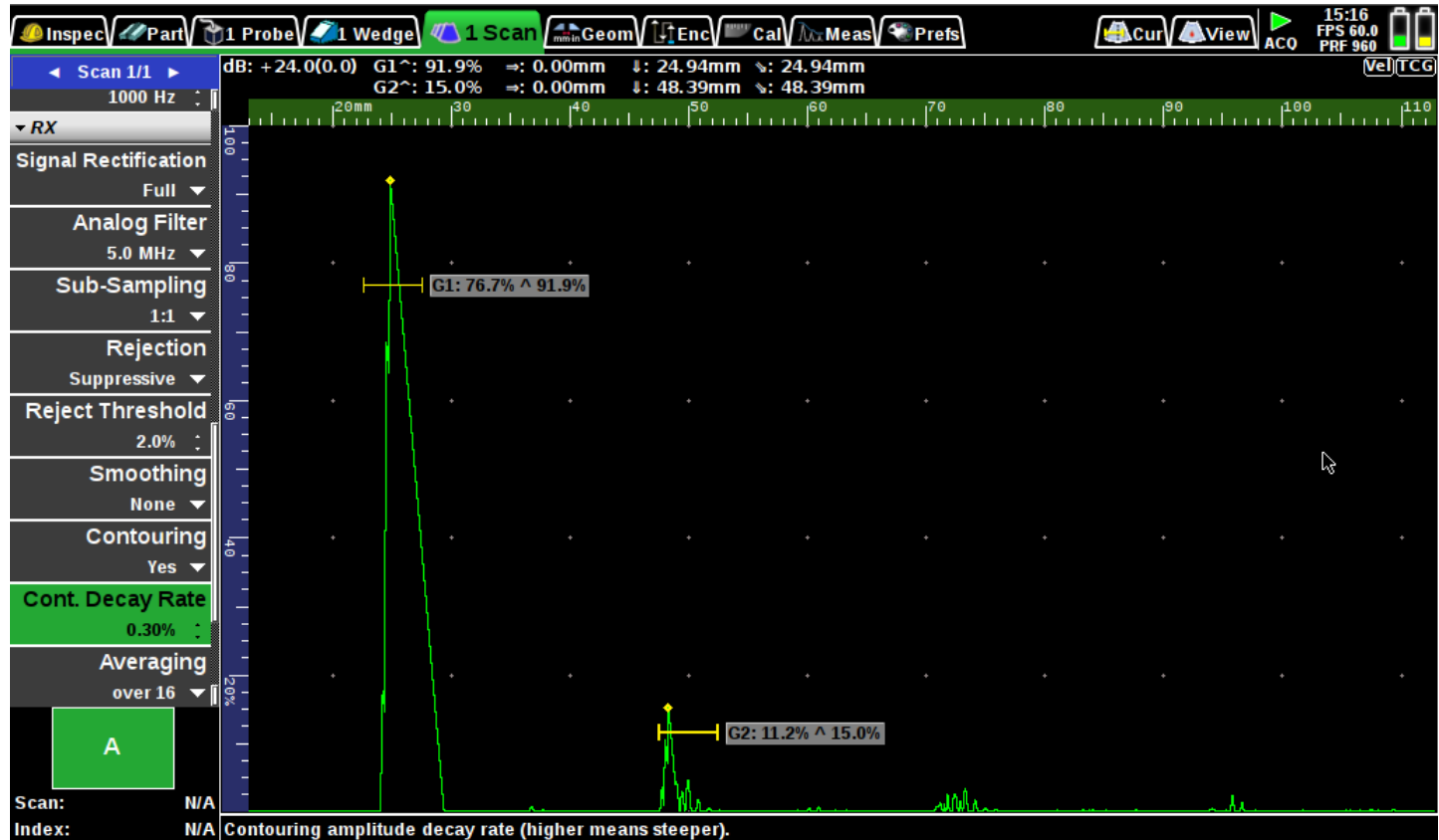
Contouring mode (as per MasterScan, SiteScan and D-Series)

- *Contouring makes it easier to set repeatable gate levels on corroded steel plate.*
- *Thickness readings can be more consistent, because the leading edge of a pulse is easier to discriminate.*



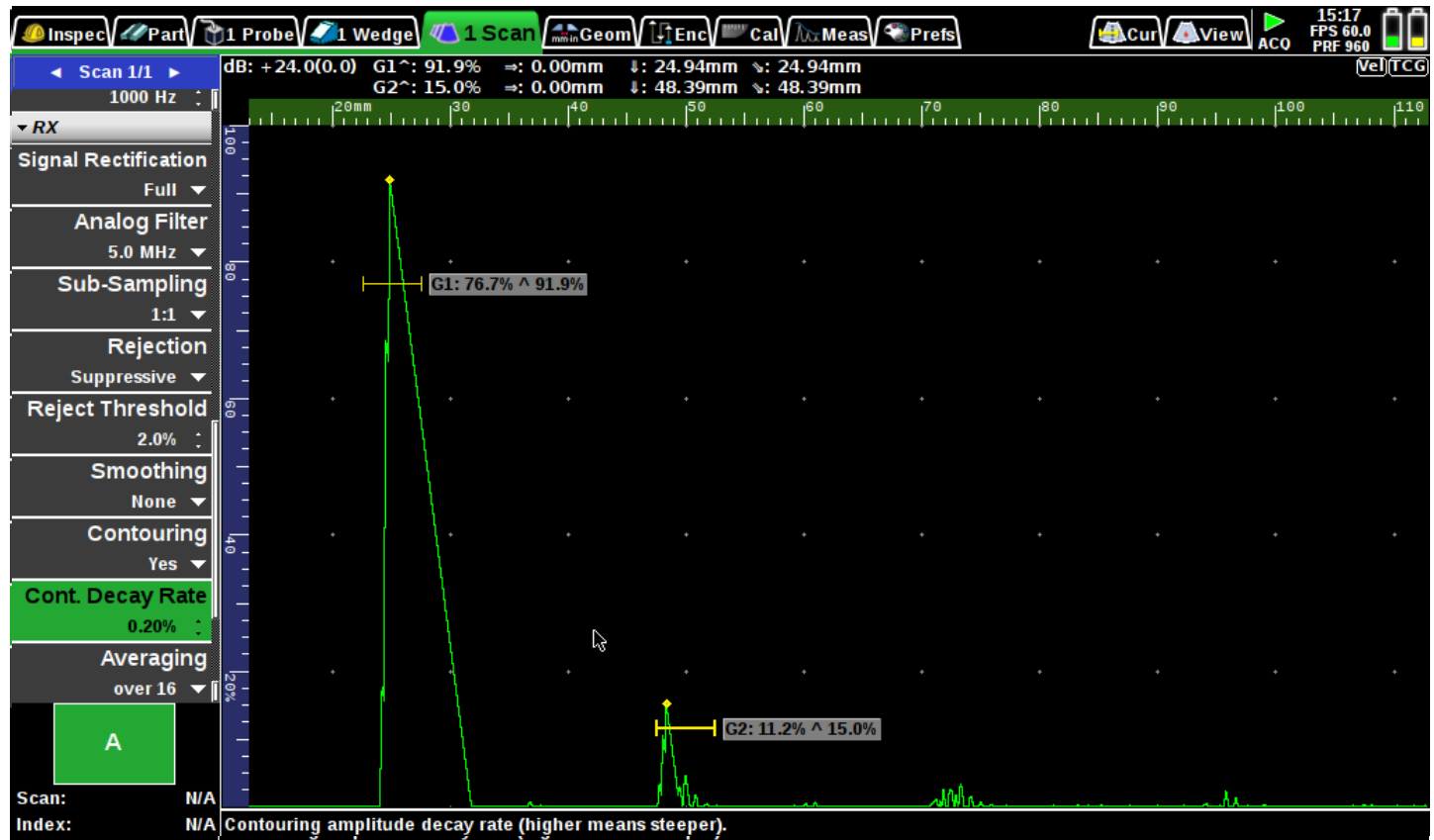
Contouring mode (as per MasterScan, SiteScan and D-Series)

- *Contouring makes it easier to set repeatable gate levels on corroded steel plate.*
- *Thickness readings can be more consistent, because the leading edge of a pulse is easier to discriminate.*



Contouring mode (as per MasterScan, SiteScan and D-Series)

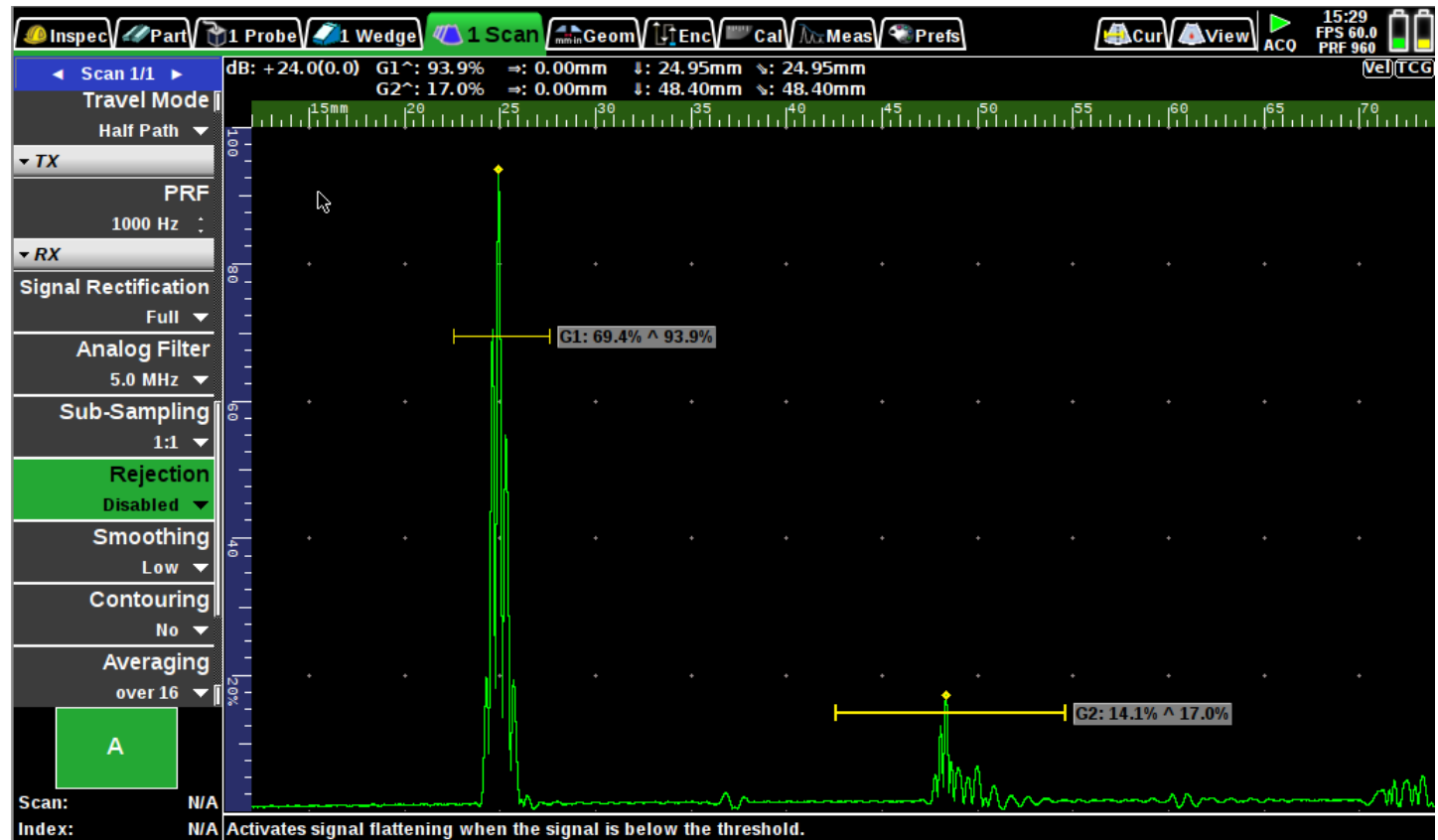
- *Contouring makes it easier to set repeatable gate levels on corroded steel plate.*
- *Thickness readings can be more consistent, because the leading edge of a pulse is easier to discriminate.*



Add reject mode

(as per MasterScan, SiteScan and D-Series)

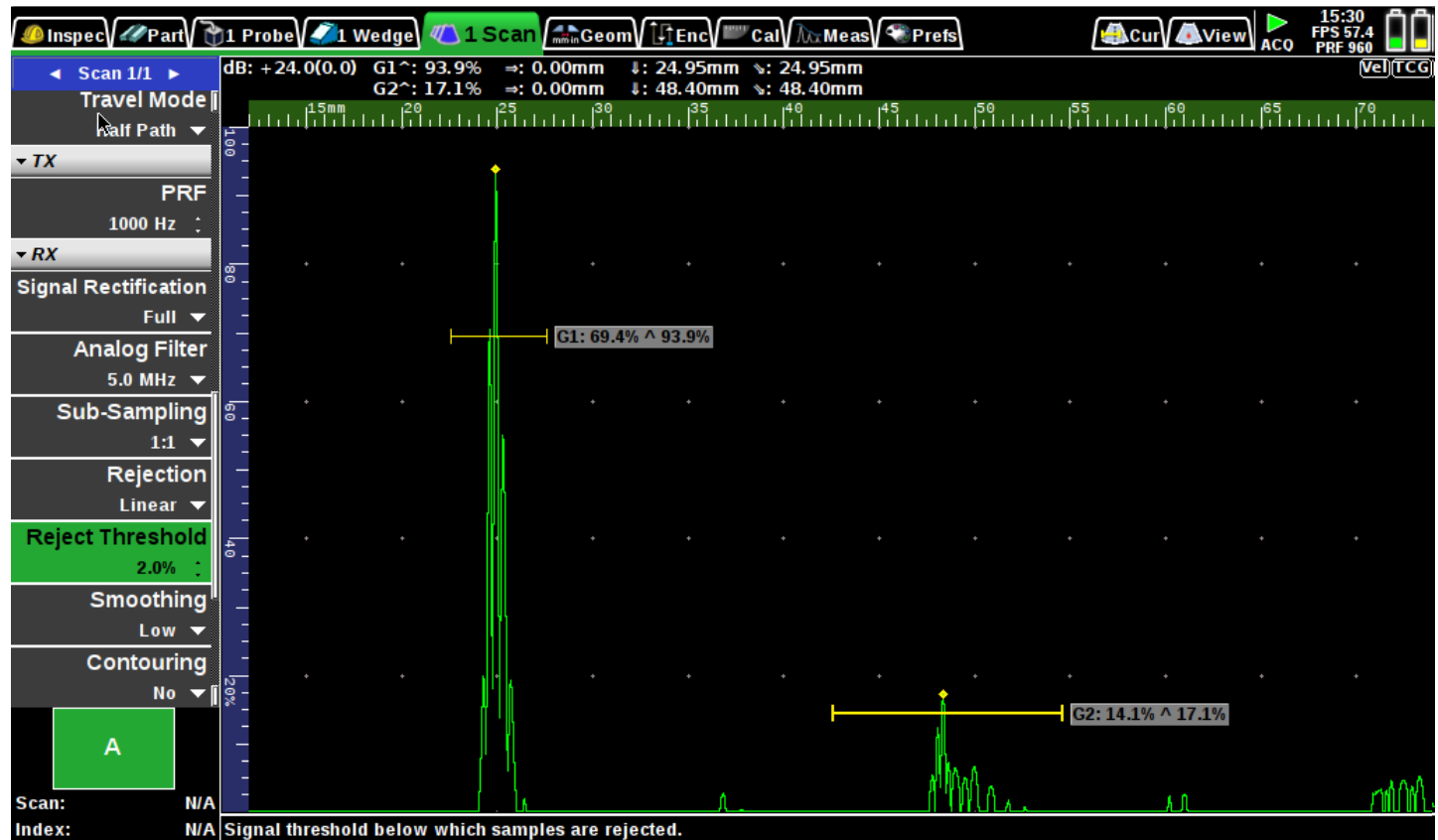
- Normal



Add reject mode

(as per MasterScan, SiteScan and D-Series)

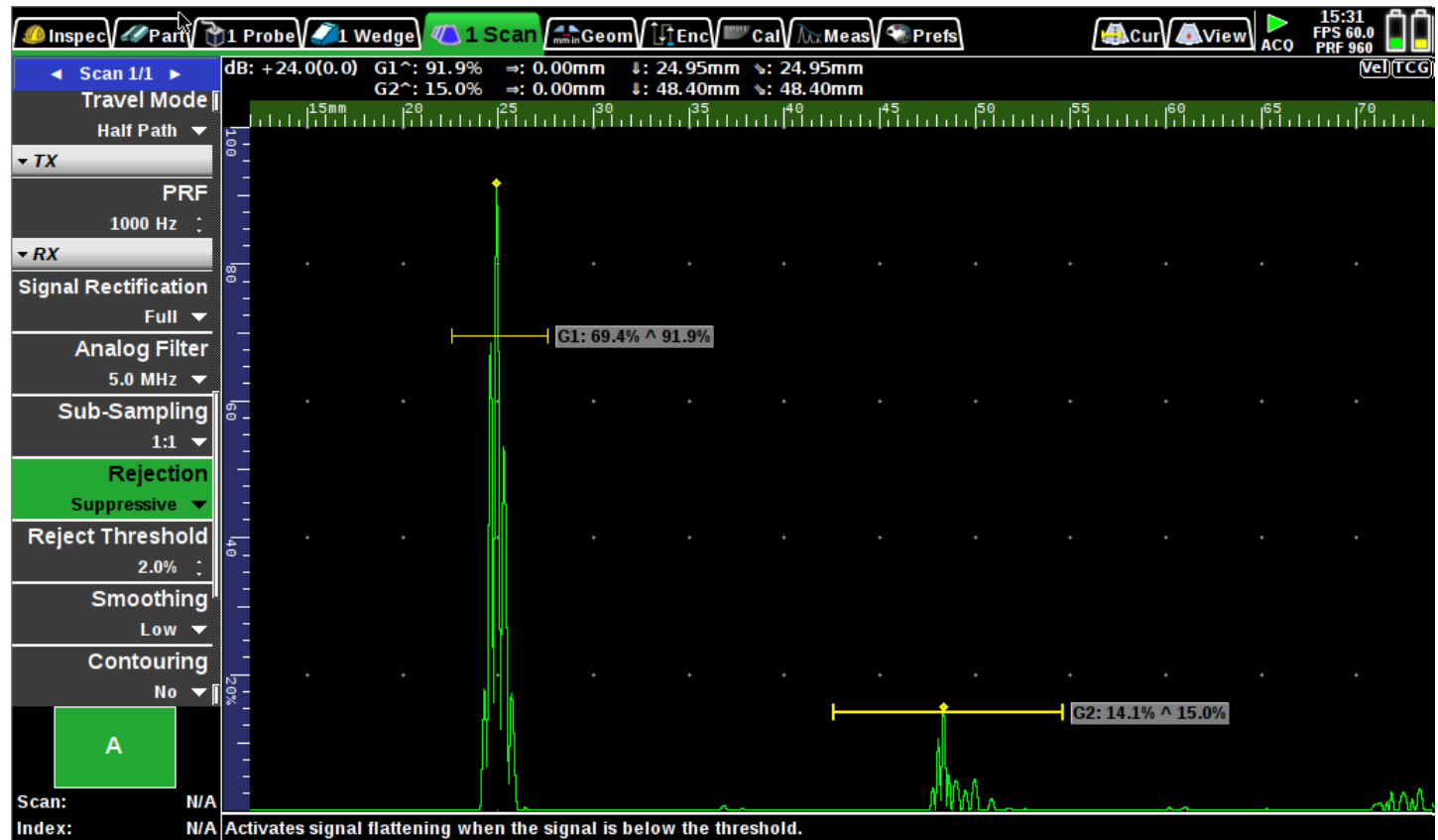
- Linear allow to substract ground noise



Add reject mode

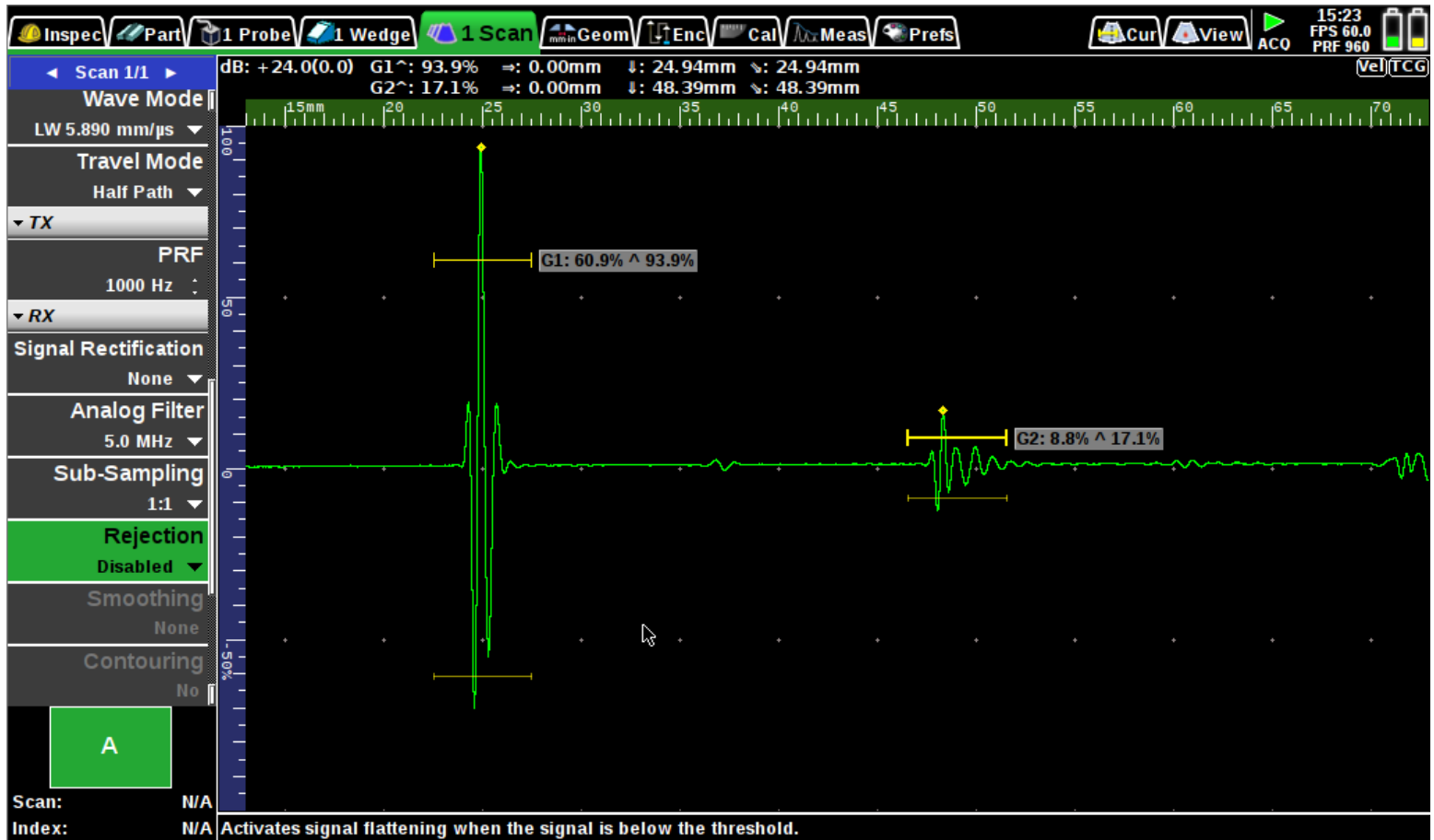
(as per MasterScan, SiteScan and D-Series)

- *Suppressive allow to subtract a constant value*



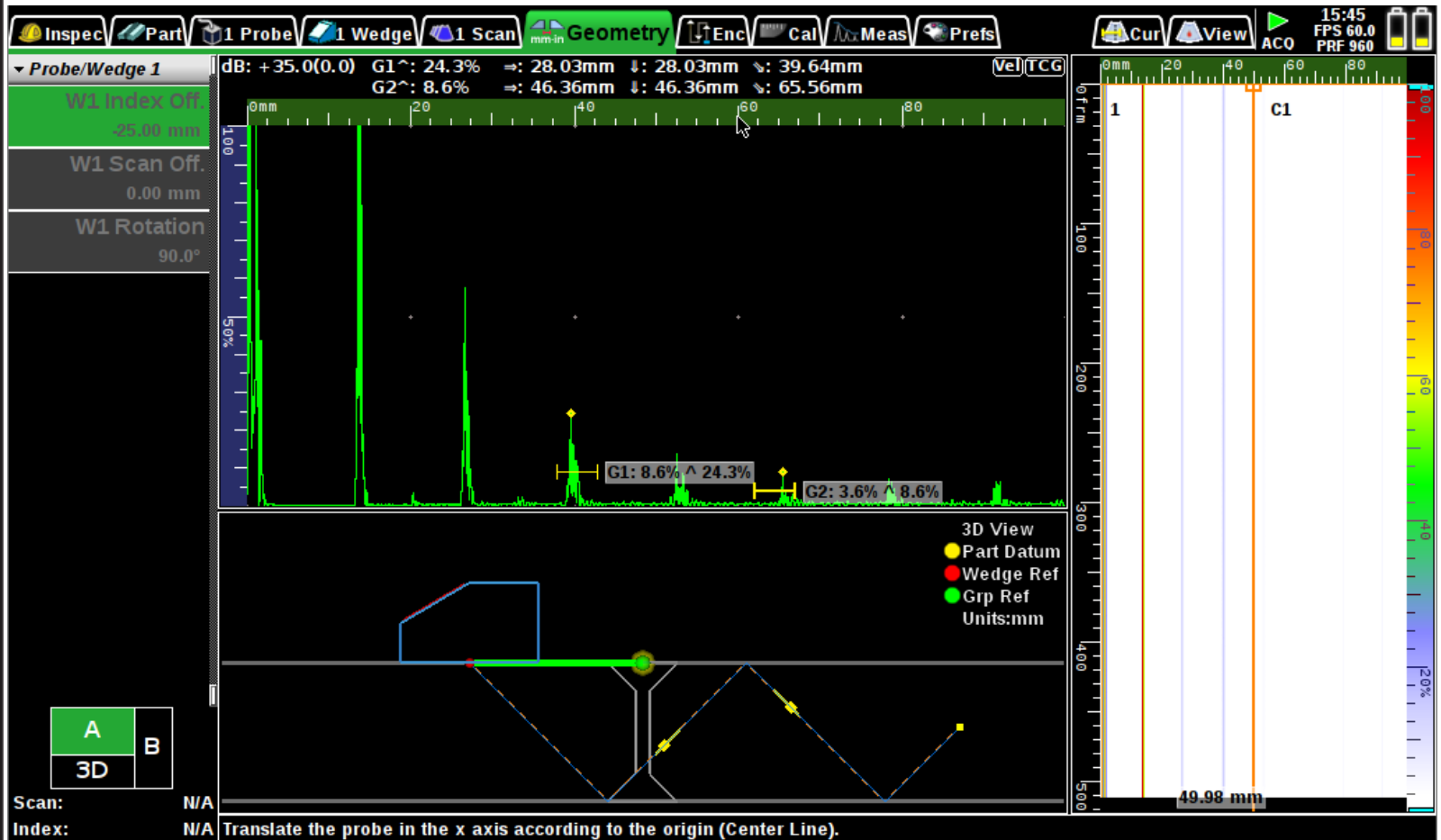
Dual polarity gate

- Evaluate positive / negative or both peak polarity



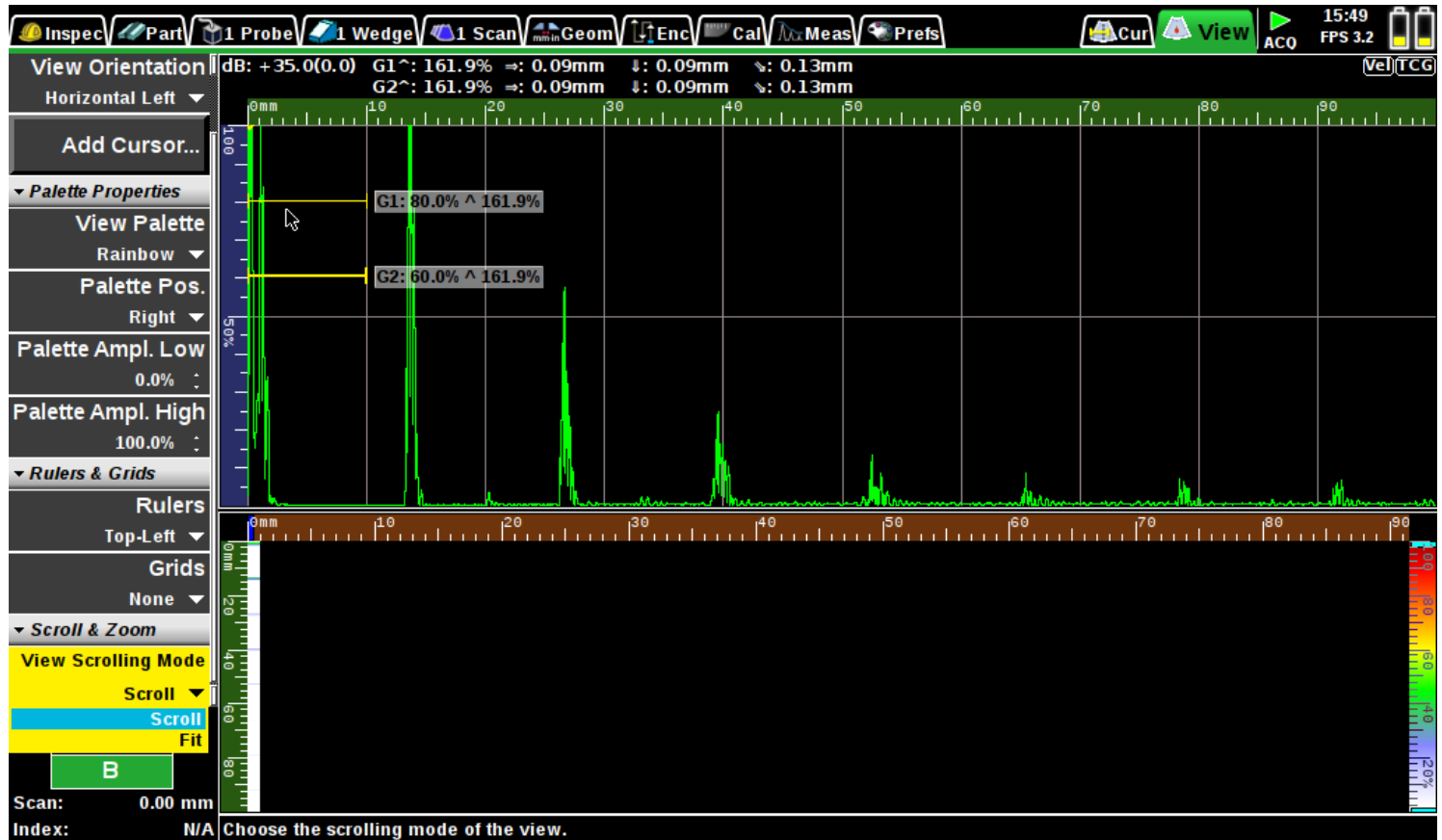
Live 3D View with defect rendering

- *Locate the defect easily*



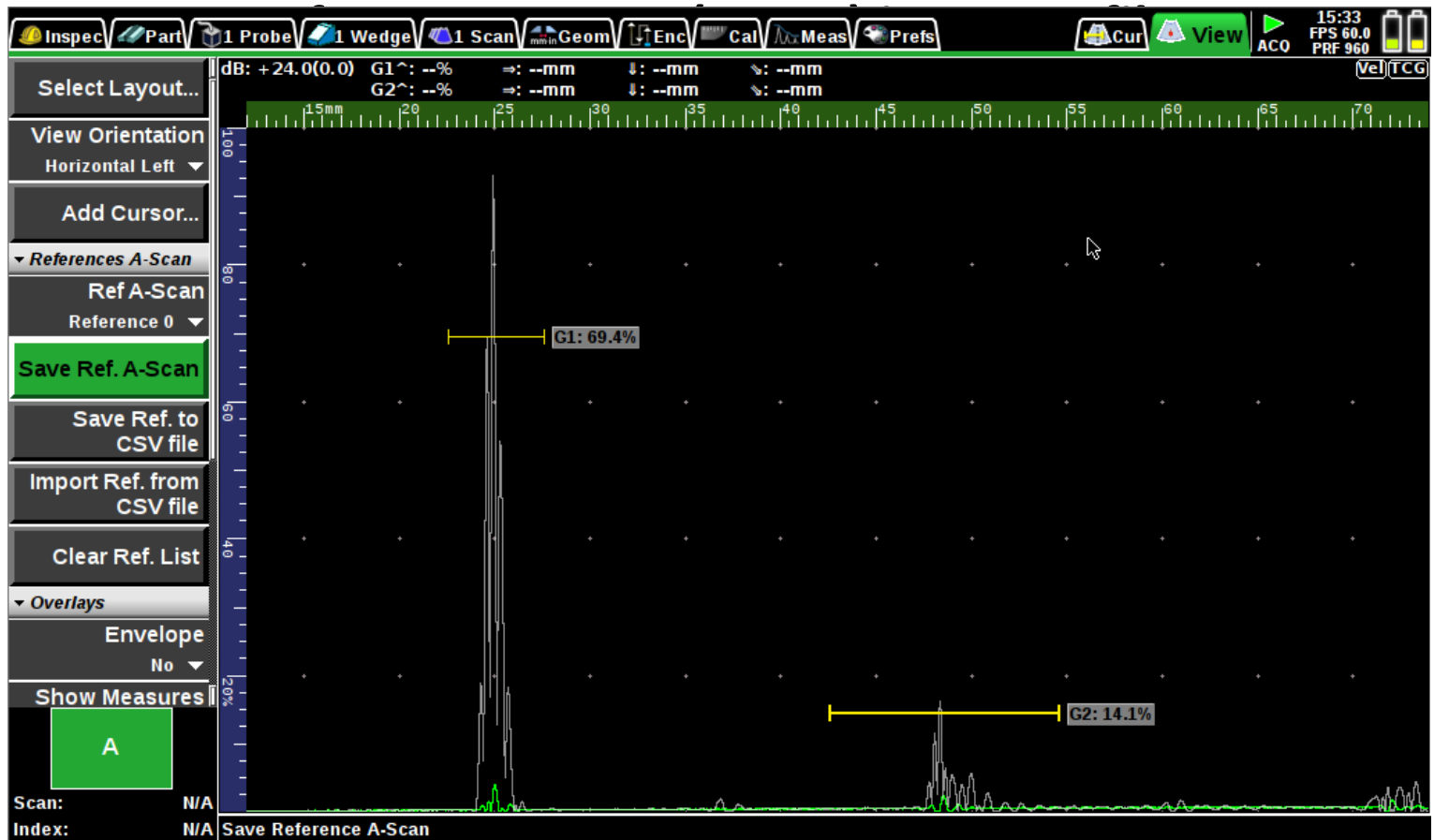
B-Scan and TOFD now support 2 rendering mode

- *Whole area: to see all area in one view*
- *Smooth scrolling: to see defect and missed frame while encoding, even on long strip*



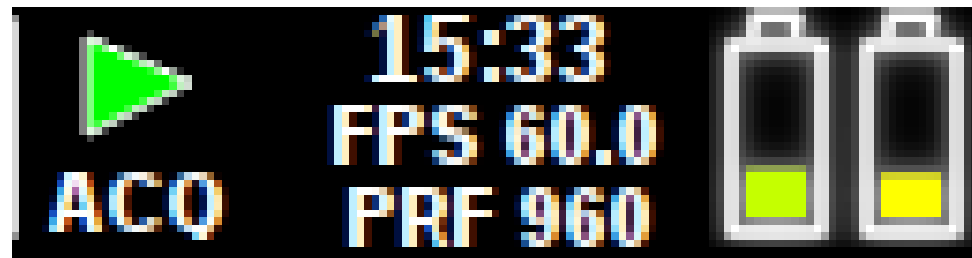
Reference A-Scan

- *Save Reference A-Scan (A-Log) into configuration file (.UTCFG) or into a CSV file*

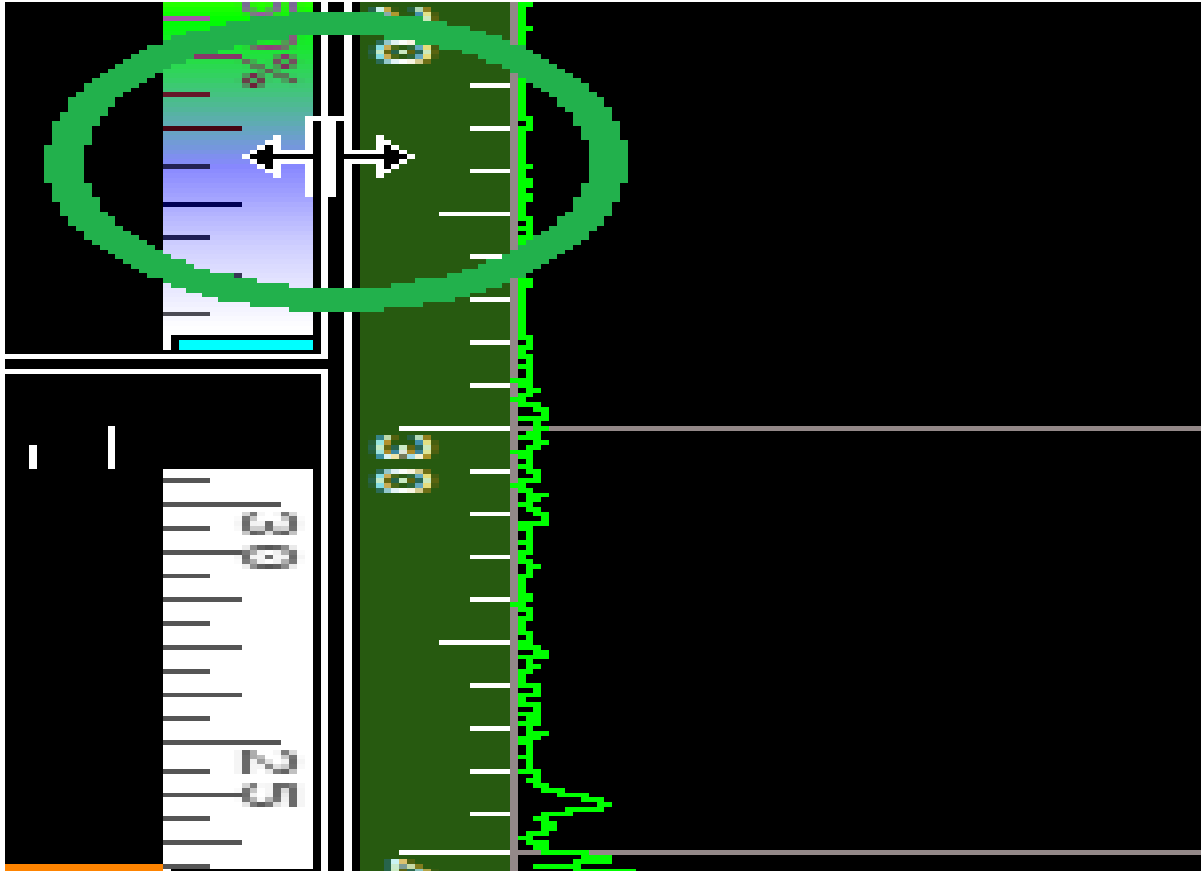


UT: Hi-PRF mode

- *A-Scan redraw enhancement, combination of multiple ultrasonic beam at high PRF (>60Hz) using a keep maximum algorithm.*
- *Increase detectability (response time)*
- *Display FPS (Frame per Second) and PRF (Pulse Repetition Frequency) in top right corner of user interface*

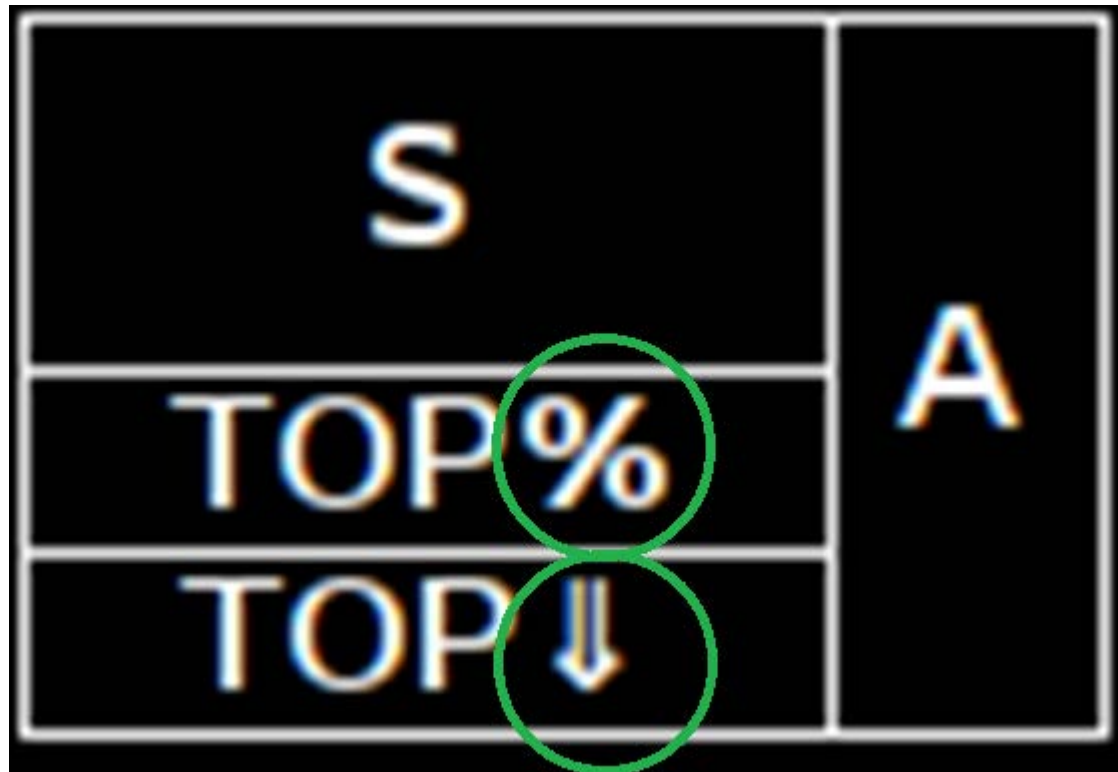


Views resizable with mouse



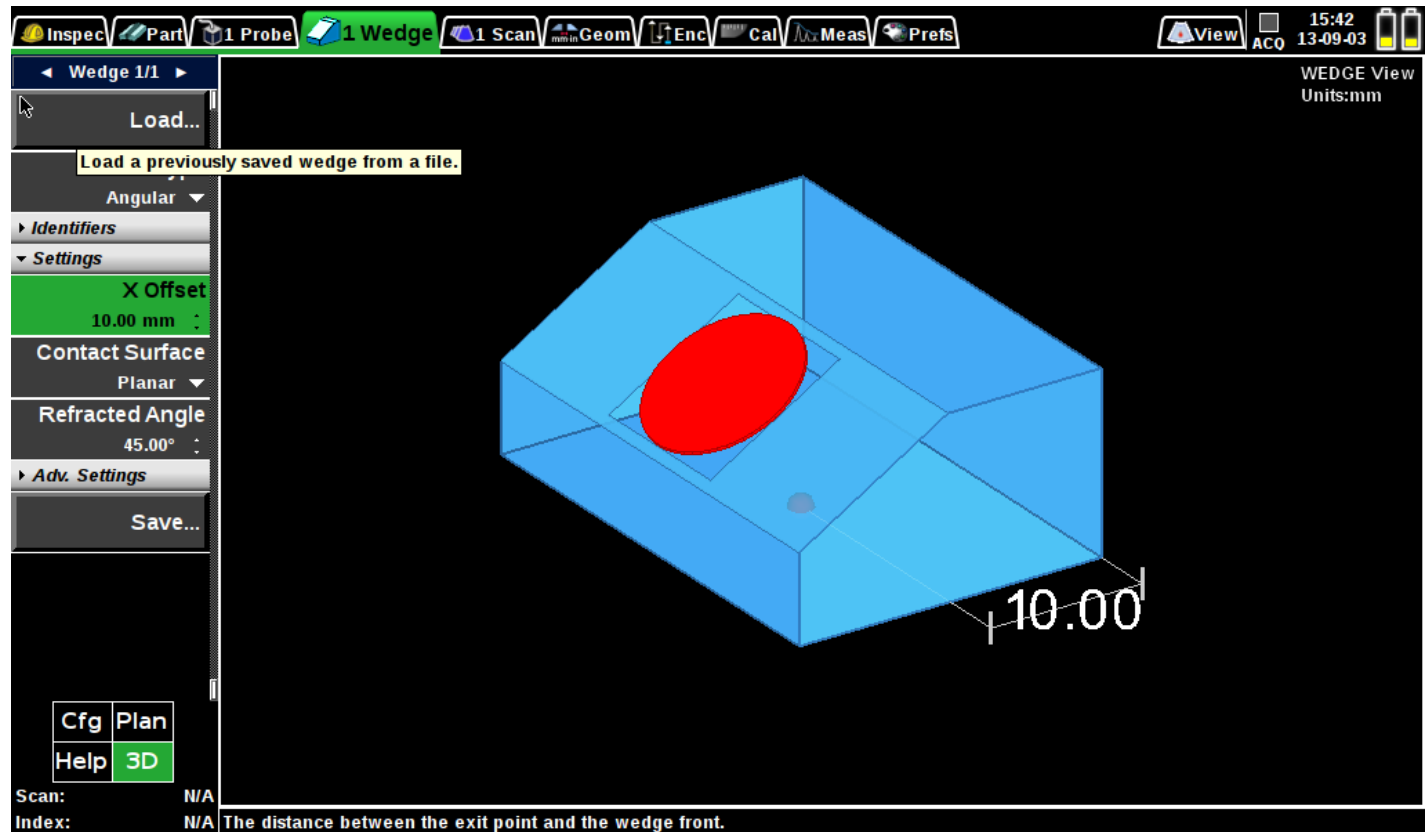
Depth or amplitude mode shown in layout image (Top/End/C)

- *Depth or amplitude mode shown in layout image (Top/End/C)*



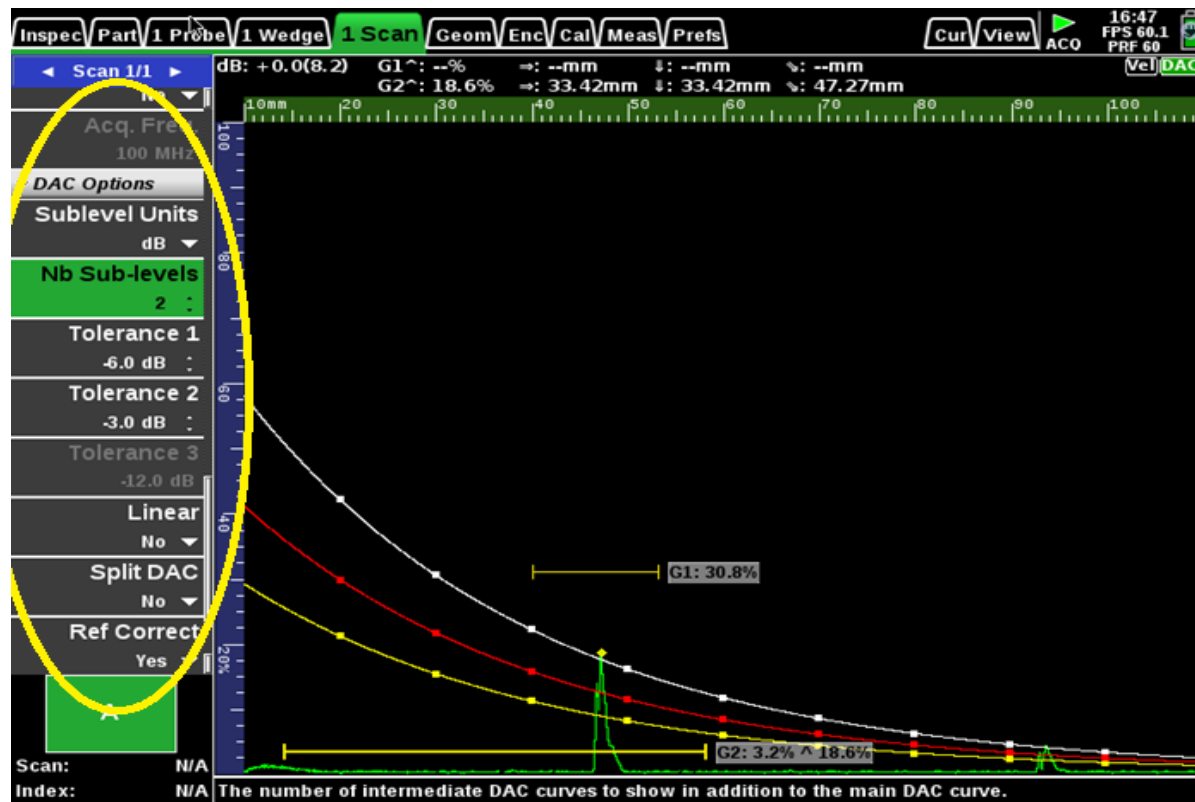
UT configuration as per standard DFD

- Only enter X-Offset and Refracted angle to specify wedge
- Renamed Delay to Zero



DAC/DGS Sub-Menu

- *No need to run the wizard to change some useful DAC or DGS parameters*
- *“Ref Correct” allows moving the curves when gain is changed*

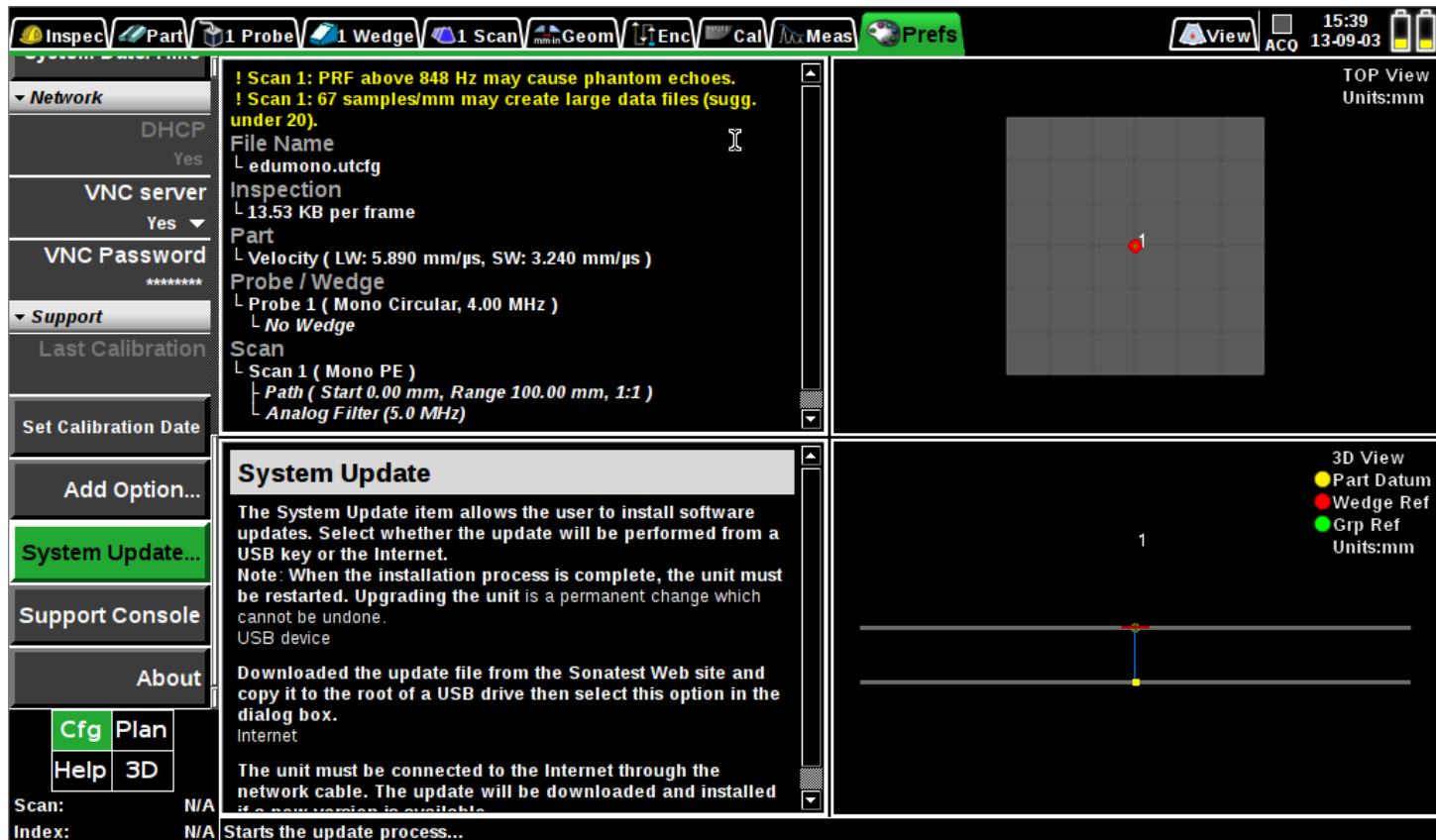


Others

- ***Add Italian/Hungarian translation***
- ***Added Graphite/Epoxy to material list***

Update with a single button push

- The Update of the software is now achieved from the application
- Only available for next release

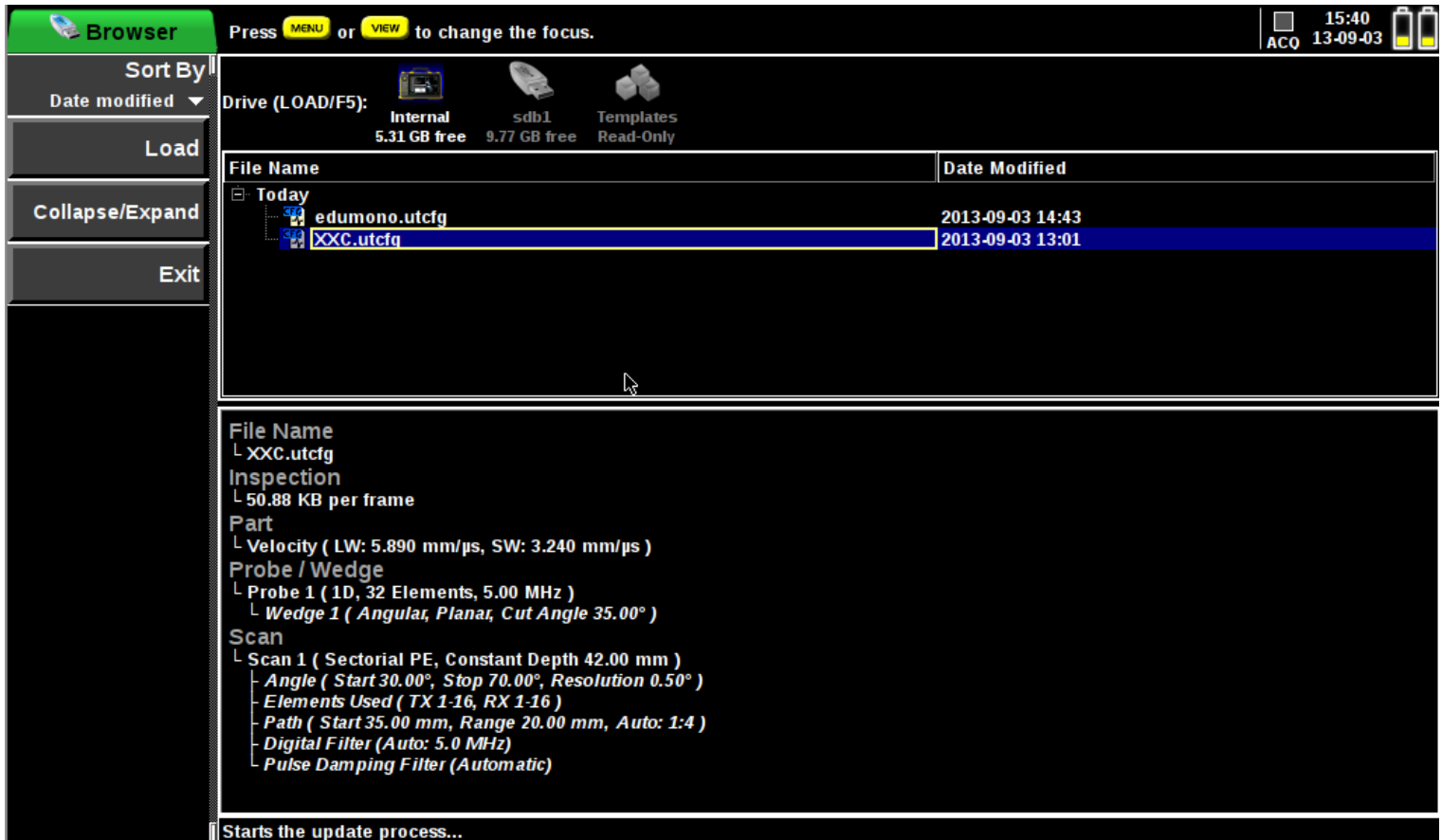


The screenshot displays the Sonatest application interface. At the top, there is a menu bar with options: Inspect, Part, 1 Probe, 1 Wedge, 1 Scan, Geom, Enc, Cal, Meas, and Prefs. The main window is divided into several sections:

- Left Panel:** Contains system settings such as Network (DHCP Yes, VNC server Yes, VNC Password), Support (Last Calibration, Set Calibration Date, Add Option...), and a System Update... button highlighted in green. Below this are Support Console and About buttons, and a grid of buttons for Cfg, Plan, Help, and 3D.
- Center Panel:** Shows inspection parameters for 'Scan 1'. It includes a warning: '! Scan 1: PRF above 848 Hz may cause phantom echoes. ! Scan 1: 67 samples/mm may create large data files (sugg. under 20)'. Other details include File Name (edumono.utcfg), Inspection (13.53 KB per frame), Part (Velocity: LW: 5.890 mm/μs, SW: 3.240 mm/μs), Probe / Wedge (Probe 1: Mono Circular, 4.00 MHz, No Wedge), and Scan (Scan 1: Mono PE, Path: Start 0.00 mm, Range 100.00 mm, 1:1, Analog Filter: 5.0 MHz).
- System Update Dialog:** A modal window titled 'System Update' is open. It explains that the update can be performed from a USB key or the Internet. A note states: 'When the installation process is complete, the unit must be restarted. Upgrading the unit is a permanent change which cannot be undone.' It provides instructions for both USB and Internet methods. At the bottom, it says: 'The unit must be connected to the Internet through the network cable. The update will be downloaded and installed if a new version is available.' Below the dialog, it says 'Starts the update process...'.
- Right Panel:** Displays a 3D View of a part. The top view shows a red dot labeled '1' representing the Wedge Ref. The 3D view shows a yellow dot for Part Datum and a green dot for Grp Ref. The units are set to mm.

Improved media browser

- *Optimize workflow after acquisition*
- *Saving and loading files is now much easier*



Browser Press **MENU** or **VIEW** to change the focus. 15:40 13-09-03

Sort By Date modified

Drive (LOAD/F5): Internal 5.31 GB free, sdb1 9.77 GB free, Templates Read-Only

File Name	Date Modified
Today	
edumono.utcfg	2013-09-03 14:43
XXC.utcfg	2013-09-03 13:01

File Name
 L XXC.utcfg
 Inspection
 L 50.88 KB per frame
 Part
 L Velocity (LW: 5.890 mm/ps, SW: 3.240 mm/ps)
 Probe / Wedge
 L Probe 1 (1D, 32 Elements, 5.00 MHz)
 L Wedge 1 (Angular, Planar, Cut Angle 35.00°)
 Scan
 L Scan 1 (Sectorial PE, Constant Depth 42.00 mm)
 - Angle (Start 30.00°, Stop 70.00°, Resolution 0.50°)
 - Elements Used (TX 1-16, RX 1-16)
 - Path (Start 35.00 mm, Range 20.00 mm, Auto: 1:4)
 - Digital Filter (Auto: 5.0 MHz)
 - Pulse Damping Filter (Automatic)

Starts the update process...

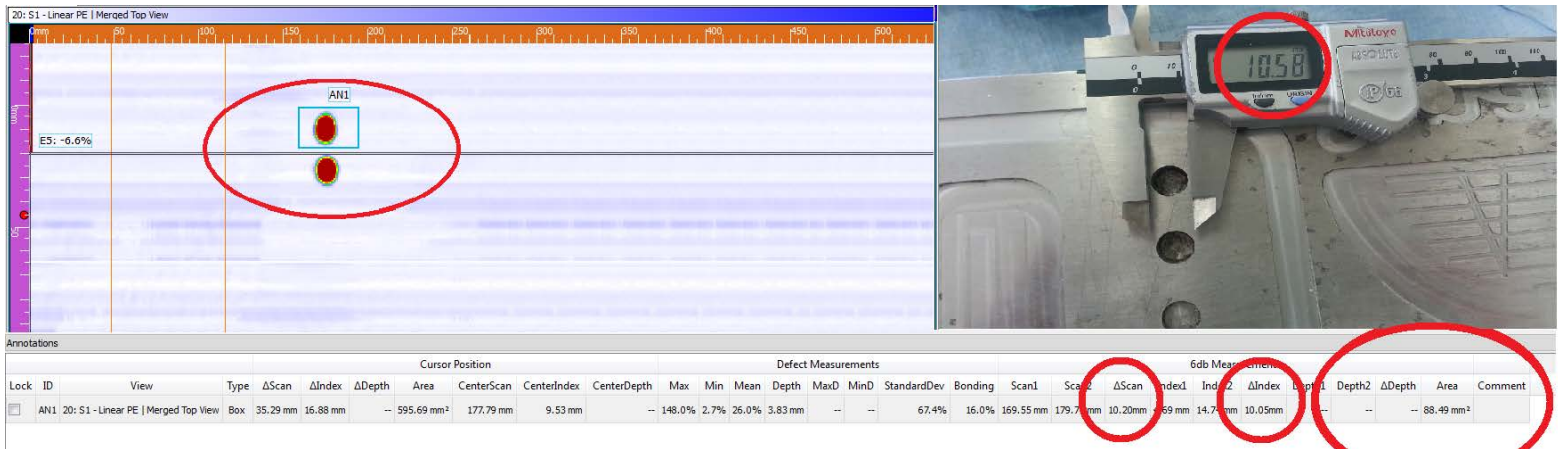
UTStudio

UTStudio List of Enhancements

- UTStudio now opens a new window for each open file
- Sessions are now saved in the UTData file instead of being separate files
- Add Unlink Cursors Feature
- Save data into CSV files (Comma Separated Value) in native acquisition resolution for C-Scan and Merged C-Scan
- Add Annotation Cursor capability (for TOP, Merged TOP, C-Scan and Merged C-Scan):
 - Table of measurements (including: center box position, max X, max Y, 6dB Drop area, Standard deviation, Bonding Ratio)
 - Save annotations to UTData file
 - Save Analysis layout to UTData file
 - Add annotation table to PDF report
 - Use checkboxes for toggle parameters
- Re-arranged right-click menu in views to depend on context
- Palette Editor

UTStudio Annotation Box and Annotation Table

- **Annotation Box can be added in TOP and C-Scan view**
- **Annotations are gathered in the Annotation table with customizable measurements (box position and size, box area, -6dB size, -6dB area, comments, ...)**
- **This information is saved within the UTDATA file (can reuse later)**
- **PDF Report also contains Annotation table**



Note: UTStudio only